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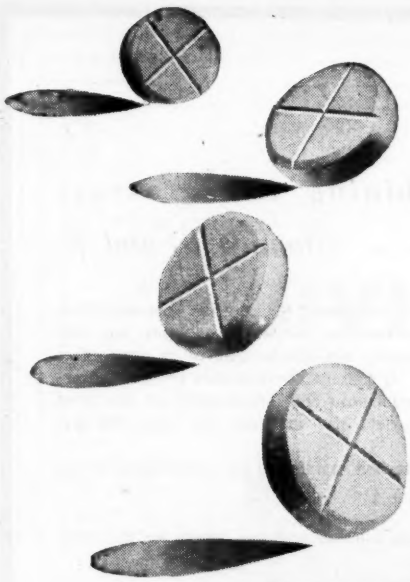

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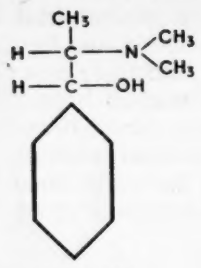

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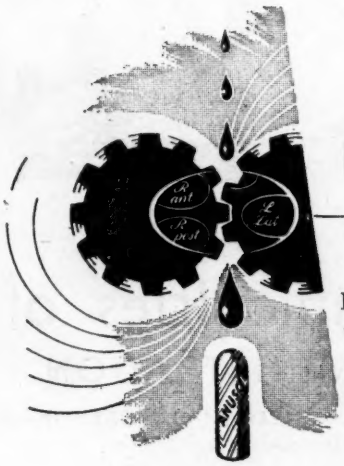

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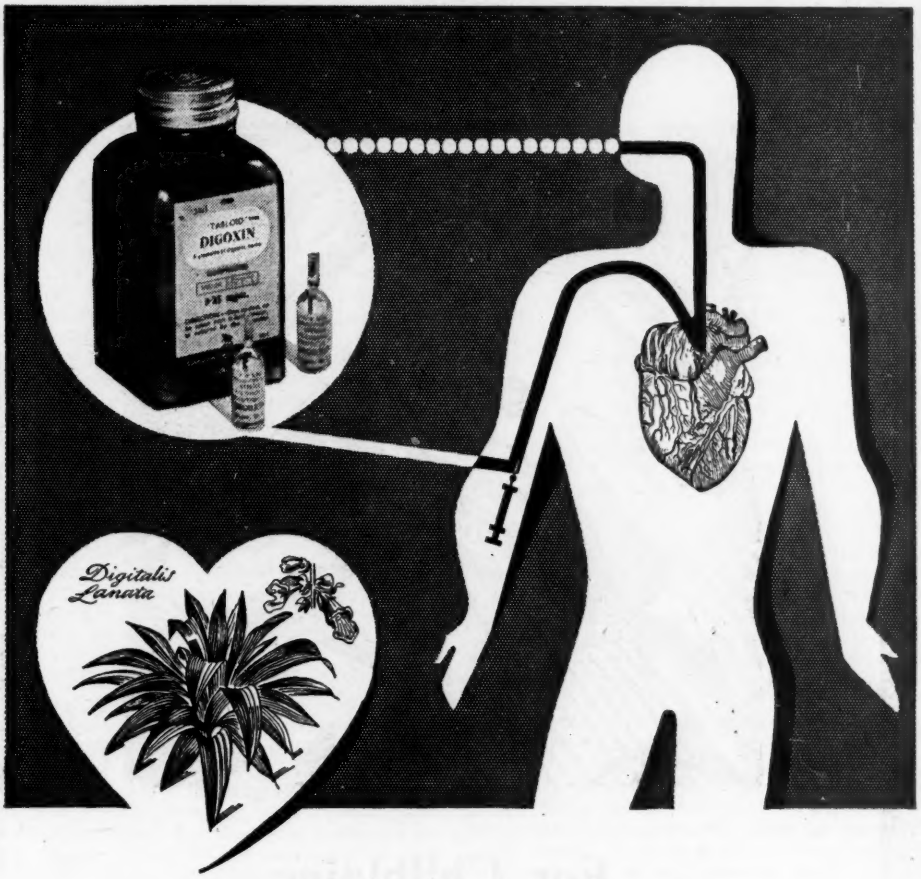

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APPLICATION OF PSYCHOLOGY TO DERMATOLOGY

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SIX years ago one of us wrote a paper intended to focus attention on psychological factors in dermatology (MacKenna 1944). We now try to specify more precisely the psychological factors involved in the production and cure of skin diseases.

Ideally, this psychological and dermatological approach to skin disease should be a double approach made by a single clinician. For reasons of training this is hardly ever possible. Hence it is necessary to establish fruitful coöperation between the dermatologist and the clinical psychologist. This may seem a banal statement, but in reality there might easily enter into such common work a sense of rivalry concerning the scientific priority and validity of the two disciplines. Since some of the differences between the two approaches are fundamental, they will be discussed first. Secondly, the actual task of the clinical psychologist to a skin department will be dealt with. Thirdly, some scientific methods suitable for such work will be examined.

RELATION BETWEEN DERMATOLOGIST AND PSYCHOLOGIST

First, psychology and dermatology must be considered to be on equal footing. Both sides must acquire a true conviction that psychology is a scientific discipline. We say "a true conviction" advisedly. There is a deep-seated tendency to consider the tangible and visible as more apparent, and hence more true, than the intangible, which is often considered for this very reason to be obscure. A further reason is that psychology is still widely denied the status of a science, and the misuse of psychology and the disregard of its potentially scientific value by dermatologists and psychologists alike is calculated to perpetuate this attitude. It cannot be too strongly emphasised that psychology should not be looked upon as a common-sense adjuvant to dermatologists, but rather as a scientific instrument in dermatological research. If psychology is relegated to the position of "yet another test," no deeper understanding of a truly psychosomatic connection can ever be reached. On the other hand it is important, not only that psychiatrists should apply basic scientific principles in the evaluation of their work, but that, particularly in dermatology, their investigations should be linked with physiological research.

A deprecatory attitude to psychology is apt to have serious consequences. The psychologist is likely to be consulted as a last resort when no physical treatment has proved to be of avail. He will thus see only specially selected cases which tend to blur his view, and lead to lopsided conclusions. The disease mechanisms he is trying to isolate will be obscured by superimposed habit formations accumulated during the long period which has elapsed since the onset of the disease. This is the more unnecessary since an early psychological diagnosis can be made by a well-trained psychologist or psychiatrist in much the same way as a dermatological diagnosis. Quite often this can be done in a short interview, the margin of error in a psychological diagnosis being not necessarily any greater than that in medicine generally. We have found that if the psychiatrist attends the outpatient department, and if necessary adds a few casual questions to those of the dermatologist, it is often possible to obtain essential information while the patient —not realising that this is also a psychological interview— has not yet mobilised his conscious or unconscious defences.

If a competitive spirit is allowed to enter into, or even replace, the coöperation between dermatologist and psychologist, it usually ends in each specialist claiming that any benefit to the patient is due solely to his particular treatment. The value of a psychological approach will then be measured by the results of treatment. Actually the evaluation of therapeutic results is a formidable scientific task, and in every branch of medicine has to be approached with extreme caution. In dermatology it is particularly unwise—however tempting—to draw definite conclusions about the cause of the disease from the results of either physical or psychological treatment, whether they be positive or negative. It is extremely doubtful whether satisfactory results of treatment will reveal the cause of the eruption: first, because psychological factors enter into every physical treatment to some extent (whether recognised as such or not), or in other words the doctor-patient relationship may far outweigh the benefit of a prescribed ointment; secondly, during psychological investigation or treatment an eruption of cutaneous origin may undergo spontaneous involution because of unrecognised somatic influences. Alternatively, psychological tensions other than those directly responsible for a skin symptom may have been lessened by psychotherapy, so that the total strain on the personality may have been eased and the stress which had found expression in the symptom can now be borne without leading to somatic disturbance.

Similarly, negative therapeutic results cannot be taken to exclude either physical or psychological causation. It is a truism to say that physical illness refractory to physical treatment is yet a physical illness. Similarly, if a psychotic proves inaccessible to psychological treatment, one does not conclude that his condition is not psychological. In skin patients in particular, there is often a nice balance of somatic and psychological factors; a change in either of them may tip the balance towards symptom resolution. It is not of course intended to suggest that results of treatment cannot be taken into account at all when assessing the cause of a disease. But a premature *post hoc propter hoc* must studiously be avoided.

PLACE OF THE PSYCHOLOGIST IN DERMATOLOGY

The psychologist invading a skin department has a double function: first, with the means at his disposal to help as many patients as possible in as short a time as possible secondly, to make investigations exact enough to merit the name of "scientific research." These two tasks are not identical.

By its nature, short psychotherapy is a hit-or-miss method. But these short cases, too, could be exploited in the interest of deeper understanding. It is not enough to be content with positive results. It is necessary to assess the various mechanisms which are operative in the treatment, and to distinguish in psychological terms what has brought about the improvement. There are a variety of curative factors at work in short psychotherapy; for example, reassurance, catharsis, "confession," the alleviation of anxiety or guilt, or ordinary suggestive influence (intentional or unintentional). The time factor, or the duration of treatment, must also be taken into account. This is particularly true in psychotherapy of long duration, as for instance in psychoanalysis proper, or in group therapy, which may last 12–18 months, sometimes much longer. It may be argued that a given skin disease has a tendency to burn

itself out during such a period, irrespective of any other influence. Evaluation of results, if they are to carry conviction, must therefore take this time factor into consideration.

Other factors, too, deserve closer study. We have found, for instance, that some skin conditions may disappear without any alteration in the personality. A patient with pruritus may report as a first sign of improvement that his itch is no longer so severe, that the impulse to scratch is no longer so urgent or compulsive; or that it seems to come more from the surface than from inside the body. In other patients, such as those with eczema of long standing, a personality change may be conspicuous before there is any symptomatic improvement. Such patients report that their skin lesion is unchanged but that they feel happier in themselves and more capable of satisfactory adjustment, either in their work or in their social contacts. The improvement of the skin disease lags behind a general improvement. Some patients, on the other hand, relinquish their symptoms dramatically.

A woman, aged 30, had suffered for 18 months from severe eczematous lesions, with an excruciating itch of both forearms, wrists, and neck, where she had extensive scratch marks. After the third psychological interview—to the surprise of the therapist—she was clear of her eczema and free from itching, with only a few healing scratch marks left. She had been violently opposed to psychological treatment.

We agree warmly with Stokes and Beerman (1948) that clinical observation during the interview is a valuable aid to psychological diagnosis. It can often be found that an itching skin complaint will behave like a sounding-board when a certain topic is mentioned.

In a woman with acute dermatitis of the whole neck the lesion became purple and started to exude profusely when she related humiliating situations to which she had been exposed, and to which she could not react at the time of their happening. She was quite unaware of this "organ language"; in fact she excused herself for rubbing and wiping her neck during the interview by explaining that "for no reason whatever" these bouts of itching and weeping of her neck would suddenly occur.

In another case of acute generalised eczema, a woman of 21 started to scratch frantically whenever her relationship to her father was discussed.

Thus even from "short-treatment" cases considerable insight can be gained; but deeper understanding can be reached from those patients who can be studied over a long period.

As stressed above, results of treatment have unjustifiably been taken as methods of investigation. Not only have they been unduly used to explain the cause of a skin disease, but a further error in method has crept into some of these investigations: the literature shows that therapists are inclined to conclude that what has cured the patient is the particular brand of psychology in which they themselves are trained and naturally believe. These disputes between psychologists of various schools have the more prejudicial effect on psychosomatic research in that they tend to focus attention too exclusively on mental conflicts and their psychic resolution. The illness, its symptoms, and its solution or cure are regarded as occurring in the psychological sphere. According to this view, a mental conflict can be expressed in words, it has a meaning and it is easily understandable; when somatic disturbances appear they serve to express or dramatise mental conflict. For instance, a patient may have a skin rash on his hands; his symptom represents symbolically, in the form of a compromise, a conflict between wishing to do and defending against doing a forbidden deed. Such would be the underlying dynamics of the hysterical symptom-formation according to Freud. As in the case of a phobia, the symptom represents a compromise between two opposing tendencies; and, of course, somatic manifestations such as skin disease may have such a conflict meaning.

A man, aged 35, was seen with a circumscribed eczematous lesion without scratch marks over the knuckles of the first and second digits of his hands. He described the sensation of this lesion as irritating, not violently nor constantly, but occurring in bouts, particularly at periods when he was idle. To relieve this itching sensation he said he never scratched violently at any time, but "I put my hands into my trouser pockets so far that the lesion rubs gently against the seam; and," he continued, "I have to rub it against something which is soft and firm at the same time." His marital relations had been severely curtailed (coinciding with the lesion on the hand) because of a protracted illness on the part of his wife. Owing to a frustration of his hetero-sexual life the temptation arose to revert to the forbidden masturbatory practices of adolescence. His skin rash represented both a gratification and the defence against it; he was altogether unaware of the symbolism of rubbing against something "firm and yet soft." The eczema on his hands cleared up completely after six sessions.

Such cases follow the classical symptom-formation which Freud has described for the psychoneuroses. Because the symbolism of such psychoneurotic symptoms can relatively easily be discerned, there is a tendency among workers in this field to read such a symbolic content into all skin manifestations. This has led many to assume tacitly that all psychosomatic illnesses can somehow or other be considered as psychoneuroses. But somatic manifestations are by no means always, or even predominantly, psychoneurotic (Glover 1949). In contradistinction to psychoneurotic symptoms they have no meaning, no psychic content, and their formation does not follow the classical pattern indicated by Freud for the psychoneuroses. Indeed, it is well to remember that the incidence of psychosomatic disease is far higher than the incidence of the psychoneuroses.

The neglect of purely clinical and physiological data when skin disease is looked upon as of the same order as the psychoneuroses may be illustrated in this way:

Some writers describe adult endogenous eczema as being based on certain conflict patterns of an adult preconscious type—for instance, over-dependence/independence. Certain types of infantile eczema (of the eczema-asthma-hay-fever type) cannot be accounted for by the same mechanism unless of course the observer assumes that in the case of infantile eczema a mental apparatus of such maturity exists that mental conflicts of an adult preconscious order can occur. Yet infantile and adult eczema seem to constitute a nosological entity, and no theory which does not embrace both types can be considered complete or valid. The mental complexity of the adult observer may easily mislead him into reading his own complicated mental structure into the simpler mental structure of the infant. This tendency has led some psycho-analysts into assuming adult functioning in the infantile body/mind unit. But this attitude seems to brush aside the basic fact that an immature structure cannot be taken to have adult function. Form and function are but two aspects of the same thing; they are intimately linked up together. A baby in arms cannot conceivably experience conflicts of the same order as the adult. The carrying back of adult conception into the first year of life (as is necessary if adult and infantile eczema are to be correlated on a conflict interpretation) furthermore makes nonsense of dynamic developmental approach in psychology.

Moreover, if a skin symptom is always considered to be psychoneurotic, the social gain of such a symptom (i.e., the quest for sympathy, commiseration, love, and attention, or the infliction of punishment or revenge on the environment) is often overemphasised by the observer. It has even led to skin disease being explained *solely* on the grounds of social gain. This "secondary gain" does of course exist; it is, in fact, a regular occurrence of some importance in hysteria. But even in hysteria the secondary gain is, after all, only secondary. The

appearance or formation of a symptom owes its existence in the first place always to what is called the primary gain. Primary gain is an attempt of the mental apparatus under stress to secure or make possible the continued existence of the personality as a whole. Secondary gain is of a minor order compared with primary gain, though none the less welcome when procurable. The social gain in psychosomatic disease, in contradistinction to hysteria, can be expected to have much less importance, even to be absent.

If psychology is to make any fundamental contribution to dermatology it is essential to establish a clear differential diagnosis between a psychoneurotic and a psychosomatic manifestation. Psychoneurotic symptoms occur when repression is faulty—i.e., when repressed unconscious conflicts force a way through mental defences. To apply the psycho-analytic structure of the psychoneuroses to all skin manifestations will prove a stumbling block to research into skin conditions. It is at the same time a doubtful service to psycho-analysis itself. Somatic manifestations are more primitive, and their mechanism is simpler, than the elaborate mechanism of the psychoneuroses. Somatic manifestations such as skin disease are mostly "affect equivalents"—they may be a disguised discharge of anxiety, fear, rage, or any other simple affect. They are due to a lack of discharge through conscious channels or to over-excitation and hence damming-up. It is well to admit, even to stress, that the detailed mechanism of such affect equivalents is not fully understood, and that much work will have to be done to explain in detail such "somatic behaviour." Research on these lines must include a study of emotional expressions and their disturbances, both from the psychological and physiological angle. The following is an example of a simple affect equivalent:

A woman of 45 had been suffering for 3 months from blepharitis, conjunctivitis, and itching round the eyes. She was for all practical purposes a well-adjusted woman—a wife, a mother of two grown-up children, and doing a part-time clerical job. She could not account for her symptoms; but on questioning it appeared that the trouble had started gradually about three weeks after the loss of her father, to whom she, the eldest daughter, had been very much attached. Asked what the loss of her father meant to her, she said that it had been a very great blow, and she volunteered the information that she had not shown much sorrow at the time of his death because she wanted to spare her mother's feelings. She added that her own family had been surprised to find her so composed. Being given the opportunity "to let go" during two therapeutic sessions, her eye symptoms cleared up.

The mechanism of the itching and inflammation round the patient's eyes may be looked upon as a "retention formation" in so far as an emotional response which had been denied an outlet at the proper time was later discharged in a less intense but more protracted and disguised form.

Psycho-analysis is the only method in which investigation and treatment coincide. The classical method cannot, for obvious reasons of time, be carried out in an outpatient department; but something approaching the classical method may be attempted in special cases. What is often described as "short psycho-analytic therapy" is fundamentally different (Macalpine 1950). Any therapy directed against a symptom is basically different from the classical method, in which the personality is allowed to unfold without any interference by the therapist or concentration on the symptom. Not even in classical psycho-analysis are all the therapeutic agents established beyond doubt. It has to be admitted, therefore, that our methods of treatment need clarification, and their rationale more exact formulation.

The type of treatment will eventually depend on forming an exact diagnosis: if a symptom is psychoneurotic the classical method of psycho-analysis is the ideal form of treatment; if however a psychosomatic symptom is—as we believe—of a different order, then other types of treatment are indicated.

METHOD

Once sufficient knowledge has been assembled about the psychological aspect of a certain skin disease it may be possible to proceed to generalisations and eventually to establish certain reaction types; but it seems timely to warn against a too ready correlation of diseases with personality types. In the literature skin patients are often referred to as "obsessionals" without any indication as to whether this is to be understood as a patient suffering from an obsessional neurosis or whether it is meant to describe with a convenient label a character make-up within the normal range. Even if it is ascertained that a person suffers from an obsessional neurosis, his skin symptom may yet be—and often is—a hysterical formation; or it may be superimposed and of different origin, and of an independent mechanism. A depressed person may be easy to recognise; but from the standpoint of psychodynamics various forms of depression can be differentiated, reflecting disturbances at different levels, and having an entirely distinct significance. If a skin patient is depressed the important question is whether the skin condition is a sequel to, the cause of, or coexistent with the depression. Needless to say the patient's opinion cannot be taken as valid. Most skin patients insist that their depression is the consequence of an irritating, incapacitating, or disfiguring skin complaint. But their depression often persists after the skin has cleared up.

These considerations indicate that much must be done before we can hope to associate certain skin diseases with definite psychological constellations. The urge to fasten certain skin diseases on to certain types is fraught with all the dangers of scientific short-cuts.

Papers have been published in which, for instance, eczema is said to be due to aggressiveness or aggression. This implies that one particular drive is considered the causative factor in the production of a skin disease. But the aggressive drive is not only normal but a prerequisite of a normal personality, and it follows that no illness can be traced to it. It is sometimes stated that a patient's aggression has reached abnormal heights. To take an analogy from the physical side, this equals the statement that certain skin eruptions are due to, say, histamine. Only through recognition of the vicissitudes aggression has undergone in the economic or dynamic household of the mental apparatus can we acquire deeper understanding of the part it plays in the formation of skin symptoms. If it were only a matter of an undue inborn pathological amount of aggression, one would more logically expect such a patient to become a violent criminal than a suffering skin patient. If the dynamic principle of the mental apparatus is disregarded, we are thrown back once more into pre-Freudian days of rigid syndromes and their description. So whether there is too much or too little aggressiveness (and the too little, although less often emphasised, may be the more serious and ominous of the two), an assessment of the quantitative factor alone will not better our understanding, but will eventually place us in a constitutional impasse. It was precisely this constitutional impasse which so dissatisfied Freud that he started to work on dynamic lines. In his early days hysteria was regarded as a constitutional degeneration. The pertinent question to be raised is why in any given case is there an insufficient outlet for or sublimation of, or mental defence against, aggression; or again, why has a skin patient so little tolerance to it that a pathological discharge into somatic channels takes place.

To give another illustration, it is often stated that skin patients have increased masochistic tendencies. It

will be realised that the skin is the predominant seat of masochism, hence this statement gets no further than its starting-point, and leads to a stalemate. It is again only the study of the underlying dynamics which will yield an answer to the question: why does one patient show more masochism than another? It is in any case necessary to distinguish between primary (mostly constitutional) and secondary (developmental) masochism. It is undisputed that women have by nature stronger masochistic (passive) tendencies than men; and one might accordingly expect to find that severely itching forms of endogenous dermatoses would be more prevalent among the female than the male population. Common experience suggests, however, that there is no great preponderance of female cases. This seems to point to the fact that primary masochism is not responsible for the formation of the skin complaint, hence it is doubly necessary to differentiate between primary and secondary masochism. Secondary masochism comes into operation when aggression can no longer be turned outward, either against people or in a sublimated form to attack tasks and problems of daily life. One has to find the cause for this incapacity to show or tolerate aggression and to the subsequent "turning in on the self" of aggressive drives. Many factors may make the normal display of aggression impossible for a person—among them guilt feelings, anxiety, or fear of injuring or destroying a love object.

Another example of the pitfalls of neglecting the dynamic approach can be found in the evaluation of "precipitating factors." These are often considered to be obvious inasmuch as they have a certain reality value. But this view is highly misleading. The precipitating cause of a skin disease is only very exceptionally known to the patient, and even if it is known its unconscious meaning is not understood. Quite commonly the patient will present the psychologist with what one might term a "cover cause."

A woman of 48 suffered from intermittent attacks of urticaria. She related that she had noticed her outbreaks occurring after eating fish on Fridays. She had lost her only son during the late war and was preoccupied with guilt feelings towards him. She had wanted to give him a good education and had saved up to give it him on his return. When these problems were worked through with her, the outbreaks of urticaria stopped. Her son had been killed on a Friday.

The reality value of these precipitating factors is much smaller than is usually assumed. The great adversities of life—as for instance the loss of dear ones—are astonishingly rarely followed by the outbreak of a skin disease. Further, reference is often made to precipitating factors without due regard to the period intervening between the impact of these and the onset of the disease. This period might be compared to the incubation period of infectious diseases and certainly merits closer attention not only as to duration but also to inter-current developments in the psychic apparatus—a point which had already been noticed by Freud in 1895. The term "trigger reaction" which has found its way into psychological writings must be viewed with some suspicion. Trigger reactions are not standard behaviour-patterns of fixed value. The psychologist is concerned rather with the cartridge which the trigger fires: he must discover how it got there and how it is that certain psychic constellations act as an explosive agent.

CONCLUSIONS

The psychologist approaching skin disease should have an open mind with as little bias as possible in regard to method. A sound training both in psychology and psychiatry is necessary. The clinical psychologist should keep in touch with the clinical and physiological aspects of his work. Both aspects of the problem should constantly be correlated.

We would like to single out at random three problems where such correlation of approach is likely to be fruitful. The first is an attempt to evaluate the factors that determine whether a skin disease will take an acute, subacute, chronic, recurrent, or intermittent course. The second concerns abnormal skin sensibility: the hyperæsthesia and hyperalgesia which may be demonstrated by a physiologist who investigates many itching skin diseases seems to us closely related to the increased skin libidinisation of the psycho-analyst. Thirdly, the phenomenon of itching with its attendant rubbing and scratching seems to present a vast field for investigation, from both the physiological and psychological angle. Itching, although one of the commonest symptoms, has not as yet received the detailed and all-round investigation it deserves.

Reviewing some of the present trends in psychological investigation of skin disease, we have pointed out blind alleys, and errors and pitfalls in method; for it is often an advance in research to do no more than to specify problems more accurately and to re-examine fundamental issues.

Attention has been drawn to the common mistake of classifying certain skin patients as psychoneurotics. Whereas the structure and the dynamics of the psychoneuroses are well established, in Freudian theory, the separate mechanisms governing psychosomatic behaviour have yet to be worked out. Freud (1929) himself insisted that psycho-analysis which had uncovered the structure of the psychoneuroses (the "transference neuroses" proper) "had but little to add to the clarification of the common neuroses (the "actual neuroses"); this task, he maintained, had to be left to biological and medical research.

It has been suggested that a study of emotional expression both physiologically and pathologically is essential to accurate understanding. Such an approach would not only correlate physiological with psychological data, but would conceivably throw light on some pathological aspects of the dermatoses. As Erasmus Wilson said as long ago as 1870: "The limits between the physiological and pathological are barely discernable. The blush of emotion is scarcely to be distinguished from the blush of transient erythema or urticaria, and the too frequent repetition and the permanence of the blush become a confirmed erythema, as in gutta rosea" (rosacea).

As some of the opinions submitted in this paper may not be accepted by all psycho-analysts, or for that matter by all non-analytical students in this field, we wish to state that we have expressed only our personal views.

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". . . So long as a variety of hospitals remained under the direct control of the department, a great deal could be done to assist families by arranging for the removal to hospital of patients suffering from various sorts of illness, but especially of patients suffering from chronic sickness, and even of old people who were feeble enough to require treatment as patients . . . it would be of great help to the department and to the people if it had control of the use of at least a certain number of beds, and was thereby able promptly to admit a patient after consideration of the medical certificate and of the social conditions of that patient in relation to those of others recommended for admission."—Dr. W. L. BURGESS, M.O.H. for Dundee, in his report for 1949.

RECENT HISTORY OF CORONARY DISEASE[1]

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(*Concluded from p. 7*)

Questions Arising

The volume of evidence that can be presented from this single study is small in relation to the size of the problem and its complexity. And the present findings may be disqualified by the limitations previously mentioned (or by others that have been overlooked entirely). Nevertheless questions must be put about the bearing of these seemingly paradoxical findings on the current picture of the pathogenesis of coronary heart-disease, and the suggestion that coronary atheroma has decreased must be explored.

NATURAL HISTORY OF CORONARY HEART-DISEASE

According to the current view there are, locally, three main interacting elements in ischæmic heart-disease (Blumgart 1943, Blumgart et al. 1940, Friedberg 1949, Horn and Finkelstein 1940, Leary 1934, Parsons-Smith 1950, Saphir et al. 1935, Welch 1920, Winternitz et al. 1933). These are:

1. Atheroma, with narrowing of the coronary arteries, vascularisation of the intima, necrosis, and hæmorrhage,
2. Recent and old occlusion of the arteries,
3. The collateral circulation,

and their interaction is modified by conditions affecting the cardiac output and the demands on it.

Of these three, occlusion is crucial in determining the transition from the merely pathological to the clinical, for the production of the heart-disease here considered. The occlusion, in turn, whether or not it can result from sclerotic narrowing alone (and this may have been absolutely commoner and relatively more important forty years ago), is due more often to coronary thrombosis, variously produced; and the first line of speculation must be based on the proposition that the central cause of ischæmic heart-disease and of its increase lies in coronary thrombosis and the occlusion it causes.

The thrombosis and the atheroma are obviously related and are usually regarded as the "acute" and "chronic" phases of one "disease"—whence the notion (if only implicit) of "arteriosclerotic" heart-disease. The atheroma is the basis of the clotting, which is a complication of the degeneration in the vessel; the more the atheroma the greater is the likelihood of thrombosis and occlusion; and the heart-disease is thus the inevitable end-result of the advancing degeneration. The present observations, however, raise the question whether this notion is any longer particularly useful. If there has been an increase in the heart-disease, if the atheroma of the victims of the heart-disease is not qualitatively different from the atheroma of the rest of the population, and if the trends shown in tables II and III are generally confirmed—even if only to the extent of showing that there has been no increase of atheroma—then the notion of arteriosclerotic heart-disease would be of historical interest only. The character of the disease has changed, it seems; the two phases have become dissociated. Indeed, with fewer eligible for the heart-disease—i.e., fewer with advanced atheroma—more seem to suffer from it. This would be a general proposition. Even if the dissociation has occurred in not more than one population (which has nevertheless shared in the general increase of the heart-disease), it must still be considered whether the notion was not too simple in the first place. Finally, there are many who remain unconvinced that there has been any increase of ischæmic heart-disease during this century. But there is no suggestion that it is in fact becoming more rare. On this basis alone the possibility of a decrease in coronary atheroma must raise questions on the meaningfulness of many of today's assumptions about the pathogenesis of the heart-disease. More cogent reasons for doubt than anything said here are provided by the common observations that only a fraction of those with severe coronary atheroma have the heart-disease (Blumgart 1943, White et al. 1950, Wyn Jones 1931), and that those who do have the heart-disease may have only moderately severe atheroma (not to mention the unfortunates with a solitary plaque), whereas many with very severe degeneration escape. Explanation of such phenomena in terms of a particularly effective anastomotic circulation may partly be begging the question, because it may only be with repeated occlusion that the question commonly arises. Moreover the thrombosis and the heart-disease seem to be increasing as much at earlier ages as in later life, when there is manifestly more degeneration, and perhaps more in the middle-aged than in the very old.

What then is the relation of coronary thrombosis and heart-disease to coronary atheroma? Perhaps advanced atheroma provides the basis, is the predisposing factor; but what will precipitate the heart-disease, who of the many so predisposed will develop the thrombosis/occlusion, and when, may not be a function simply and directly of the atheroma or of its severity. There may be a necessary and critical level of atheroma (Leary 1934, Saphir et al. 1935) that is the *condition* of the heart-disease; but beyond that other factors are possibly more important as *causes* of it. The indication may therefore be to pay less attention to the atheroma which predisposes, and more to the thrombosis which precipitates, the heart-disease.

There are two main aspects of this thrombosis: the coagulating blood and the local disturbances of the degenerate vessel that provide the setting and opportunity for the clotting. Fundamental questions of constitution and personality, nutrition, hæmodynamics, and endocrine responses are involved in these processes, and more specific ones. Is there any evidence, for instance, of changing frequency in intravascular thrombosis at other sites? Pulmonary embolism might be so investigated, though this would be very difficult (Strom 1950). Are sufferers from coronary thrombosis prone to clotting elsewhere? (Meakins and Eakin 1932). How are intimal necrosis or mural hæmorrhage, the rupture of atheromatous "abscesses," or the separation of plaques related to changes of heart-beat and blood-pressure, to dilatation and spasm of the coronary arteries? (Blumgart 1943, East and Oram 1948, Friedberg 1949, Horn and Finkelstein 1940, Master et al. 1939, Paterson 1938, Winternitz et al. 1933). And what of the relations of habits of life and psychological forces to the neural and humoral mechanisms of these? (Bülbring et al. 1949, Proceedings of the First National Conference on Cardiovascular Disease 1950, *Psychosomatic Medicine* 1945, Registrar-General's Occupational Mortality Supplement 1938, Wolff 1950).

As yet there is little warrant for this shift of interest from the chronic events of coronary heart-disease to the acute, either in the clinical history of victims (where the frequency of silent thrombosis and infarction is only one of the difficulties) or in studies of their blood-coagulation (Boyer 1946, Friedberg 1949, Mintz and Katz 1947,

1. "Coronary disease" is taken here to include (1) coronary atheroma (atherosclerosis) and (2) coronary, ischæmic (arteriosclerotic) heart-disease, particularly the syndrome of thrombosis, occlusion, and infarction, and its variants. "Ischæmic" heart-disease is the most accurate term, but "coronary" heart-disease is convenient and in too common use to be discarded.

Peters et al. 1946), though emphasis on the thrombosis has in a different way improved the possibilities of treatment.

Decrease of Atheroma and Increase of Heart-disease

Another question must be put. Is the decrease of atheroma suggested by tables II and III unrelated to the increase of heart-disease shown by table I, having merely coincided in time, or are the two processes in some part cause and effect? How sensible this question is depends primarily on whether the decrease is general, granted that the increase has been observed in many populations. Two obvious mechanisms whereby a decrease of atheroma might so operate suggest themselves. If calcification is a method of healing of atheromatous lesions, and during the process mural capillaries are obstructed (Winternitz et al. 1933) and atrophy, a decrease in calcification may favour an increase of subintimal hæmorrhage (Buck et al. 1950, Cowdry 1933). Spasmodic contraction, too, may be commoner in vessels not so calcareous. More generally, a decrease of the atheroma might promote the development of the heart-disease because with less narrowing of the arteries there may be less stimulation to open up the intercoronary vessels. This might be of particular moment if acute thrombotic-occlusive lesions were increasing for other reasons, and if emergency responses of the anastomotic circulation were not fully effective. But these are not problems that can be investigated from the present material. Nor is it possible to do more than put the cognate question—whether ischæmic heart-disease is occurring more commonly in persons with less severe atheroma, whether (as it were) there has been a lowering of the critical level of coronary atheroma. This last proposition would, of course, go further than that previously put forward, which merely suggested that the heart-disease is increasing despite the decrease of severe atheroma—without implication about the degree of atheroma necessary in the individual case. The nature of the present material cannot permit of an estimate even of the amount of calcification in the coronary arteries of those dying from coronary heart-disease.

Increase in Heart-disease; and its Prevention

If the present observations are sound, explanation of the increase of coronary heart-disease by an increase of the predisposing atheroma becomes unconvincing. The mechanism of the increase may be an increase of the thrombosis that is the precipitating cause; and—possibly serious in relation to the collateral circulation—this may be occurring at younger ages than formerly. In turn this increase in thrombotic accidents or incidents may be due to changes in the coagulability of the blood or to an increase of disorders in the vessel wall that promote coagulation. No clue to the causes of the increase of the heart-disease has emerged, except for the suggestion of a qualitative change in its incidence about the close of the first world war. This, if confirmed, would indicate study of changing modes of life and the changing environment, the epidemic constitution, of those years.

Two possible approaches are indicated to the prevention of coronary heart-disease. Control may be achieved through reduction of the predisposing atheroma. But if the heart-disease is increasing because the precipitating thrombosis is increasing, the reduction might have to be very radical to show results. The indications are that even now only a small minority of those "eligible" in terms of coronary atheroma do actually have the heart-disease, at any rate in the ages considered. If there has been anything like the decrease of advanced atheroma shown by tables II and III, and nevertheless the net result has been the recent increase of the heart-disease, it would obviously need a tremendous further decrease of atheroma to annul the effects of the increase in thrombosis—indeed the decrease would have to be as steep as the increase. Alternatively, prevention may become possible through control of the intravascular thrombosis. A fortiori, these considerations would apply in populations where coronary atheroma has not decreased and there are greater numbers eligible, unless it can be shown that there is an aggravating factor associated with the decrease itself. In that event the problem would become even greater—so to control the atheroma that the lesions did not sufficiently mature to form the basis of thrombosis and not only to reduce the volume of severe atheroma.

Occlusion without Thrombosis

This "thinking aloud" started from the proposition that coronary thrombosis is the central problem. But what of the many cases where no recent thrombus is found? Should it be a common fact that occlusion can be produced by sclerosis alone, and infarction merely by stenosis, it must make nonsense of much that has just been written. If coronary heart-disease has increased and the sufficient cause in a large group is severe atheroma, the main finding of the present investigation becomes suspect on that account alone. Theoretically it is possible that the atheroma decreased in the vast majority of the population but increased in a special minority. To this it may be objected that severe coronary atheroma, as severe as in these cases *with* the heart-disease, occurs so often in those *without* it—an observation that demands a search for additional causes. Perhaps some of the explanation lies not in the diseased vessels but in what is required of them.

The question arises, however, whether these facts can be accepted. They are often not at all clear (and, in passing, one who works much in the "inexact" sciences cannot but be impressed by the differences of opinion among the experts in a field such as this—consider the variation in the reports of mural hæmorrhage alone, for example). Not only may it be very difficult to be sure whether previous thrombosis has participated in an occlusion that appears at present to be merely sclerotic, but it may also be impossible to assess the contribution of old thromboses to the present failure in coronary function. Moreover, where arteries appear only to be narrowed, the problem may have to be reconsidered in the light of the work on fibrinolysin and the possibility that thrombus has been dissolved (Macfarlane and Biggs 1949). This aspect of the matter must so unsatisfactorily be left.

DECREASE OF CORONARY ATHEROMA

The possibility of a decrease in coronary atheroma between 1908–13 and 1944–49 is interesting from two points of view. The first has just been considered—the thinking it may provoke on ischæmic heart-disease. But the proposition has been advanced that tables II and III are to some extent typical of the general population, or the "hospital class" of it, and the question of a decrease in the atheroma has therefore an intrinsic significance. There may be important constitutional elements in coronary atheroma, and there is little doubt that the "population" of 1908–13 was more homogeneous than that of 1944–49; but there is no useful approach along these lines. Heredity apart, there are three main sets of conditions associated with the degeneration. There is more coronary atheroma among males, and the incidence increases with age, with hypertension (and in hearts of above average weight), with obesity, and in certain metabolic disorders (Friedberg 1949, Wilens 1947). Research today is concerned mainly with the last and, particularly, with the nutritional components. The present evidence suggests that there has been a decrease of coronary atheroma in both sexes, at ages 35- or 45-69, in those with and without hypertension. The question next arises whether this over-all decrease

during forty years is associated with nutrition, with changes in the national diet. A clue to the answer may be provided by a more detailed study of the behaviour of atheroma in this London Hospital series. The condition of the coronary arteries in 1915–39 was therefore investigated with the material and methods already described. The 1915–18 to 1927–31 figures include all the available reports; those for 1935–39 include only the reports of Dr. Woods and Professor Russell, so as to permit more direct comparison with the figures given previously for 1944–49.

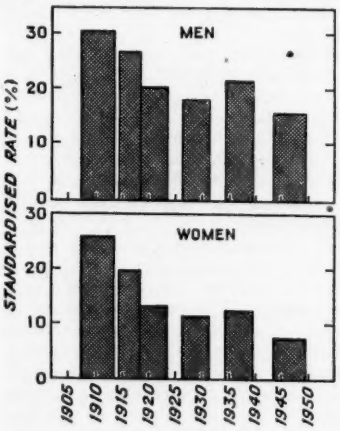

Fig. 4—Prevalence of advanced coronary atheroma at the age of 50–70 in men and in women (data from necropsies at the London Hospital): each hatched column shows average percentage for the years included, and the percentages are standardised on the age-distribution of the population of England and Wales in 1947.

Fig. 4, which relates the data of tables IV and V to those of tables II and III, shows the same broad tendency in both sexes, and it may be summarised as follows: a decrease between 1908–13 and 1919–23, then small changes till 1935–39, and a further decrease in 1944–49. It is interesting that decreases occurred during both rationing periods (Aschoff 1924, Beveridge 1928, Ministry of Food 1949, Vartiainen and Kanerva 1947), and this accords with many views on intake of animal fat, the blood lipids, and atheroma. The nutritional relations of atheroma are now being unravelled, and not only is there promise, with the application of physical chemistry as well as biochemistry, that the rôle of the lipids, including cholesterol, will be clarified, but it may soon also become possible to consider other possible connections between atheroma and diet. Questions already arise about the extraction-rate of flour, the vitamin-B complex, and intermediate cholesterol metabolism; about choline, other lipotropic factors, and the fatty deposition; and about the intake of antithyroid substances (*Annals of Internal Medicine* 1950, Cowdry 1933, Ministry of Food 1949, Gofman et al. 1950, Hueper 1944–45, 1949, Steiner 1950). The calcification, as distinct from the fatty stage, might have been mainly decreased—which recalls one feature of the nutritional history of the first world war (Drummond and Wilbraham 1939). Other changes, however, should also be remembered; there was, for instance, a steep decline in the consumption of alcohol during the first war, and there may have been something of this among civilians in the second. Moreover, it is no longer altogether fanciful to think of diet in relation to hypertension. Such a coincidence of decrease in atheroma with food-rationing suggests that the present findings are not due to special causes operating locally in this particular population, but may be of more general significance. There is insufficient evidence on which to discuss other possible factors in the decrease, such as changes in the water-supply and cooking habits.

As interesting as these reductions is the modest recovery during the inter-war period which left the level at its close (1935–39) about the same as at its beginning (1919–23). This was not the case with diabetes and gall-bladder mortality—also possibly related to fat intake—which fell in both wars and rose between them. Perhaps such increase in fat-consumption as occurred in this section of the population during the inter-war years was adequately covered, vis-à-vis atheroma, by other simultaneous improvements in the diet, but there is no basis for such speculation. Possibly the suggestion of an increase in coronary atheroma in the relatively prosperous years of 1935–39 may be significant. Possibly there is here a combination of "generation" and contemporaneous effects on the cohort exposed during the first world war. Possibly the small response during 1919–39 merely reflects technical flaws and inadequacies of the present approach to the problem.

I do not feel competent to discuss the relevance of these findings to the various theories of the pathogenesis of atheroma other than nutritional (Duguid 1949, White and Ferrero 1949). Nor can the relevance of animal experimentation on atheroma to the human problem be considered here. I have dealt only with the coronary arteries, but may be able to report later on the abdominal aorta. The question of the special localisation of atheroma would be most usefully discussed in the present connection, when comparative evidence on the historical trends of atheroma in different arteries is available.

TABLE IV—PREVALENCE OF ADVANCED CORONARY ATHEROMA IN MALES AGED 50–70 AT NECROPSIES IN THE LONDON HOSPITAL

Age-group (yr.)	No. of cases							
	In 1915–18		In 1919–23		In 1927–31		In 1935–39	
	Total	Proportion with advanced atheroma	Total	Proportion with advanced atheroma	Total	Proportion with advanced atheroma	Total	Proportion with advanced atheroma
50–54	123	12%	139	14%	169	8%	62	13%
55–59	107	24%	140	18%	183	16%	84	17%
60–64	94	30%	109	21%	143	17%	62	26%
65–69	62	50%	63	33%	89	38%	54	37%
		St. rate		St. rate		St. rate		St. rate.
Total	386	50–69 27·0%	451	50–69 20·4%	584	50–69 18·2%	262	50–69 21·7%

These cases form group C. Deaths from coronary heart-disease, from hypertensive disease, from arteriosclerosis in other sites, and with diabetes are not included.

St. rate = standardised rate

TABLE V—PREVALENCE OF ADVANCED CORONARY ATHEROMA IN FEMALES AGED 50–70 AT NECROPSIES IN THE LONDON HOSPITAL

Age-group (yr.)	No. of cases							
	In 1915–18		In 1919–23		In 1927–31		In 1935–39	
	Total	Proportion with advanced atheroma	Total	Proportion with advanced atheroma	Total	Proportion with advanced atheroma	Total	Proportion with advanced atheroma
50–54	43	5%	67	4%	90	7%	34	6%
55–59	44	18%	53	6%	79	8%	40	8%
60–64	37	27%	49	14%	63	10%	33	15%
65–69	40	35%	30	33%	47	26%	16	25%
		St. rate		St. rate		St. rate		St. rate
Total	164	50–69 19·8%	199	50–69 13·1%	279	50–69 11·5%	123	50–69 12·4%

See footnote to table IV.

Indicator of Atheroma: Further Validation

Tables IV and V again show fairly regular patterns with age and sex. An attempt was now also made to compare in finer detail the findings for 1935–39 with those for 1944–49, as the reports of Dr. Woods and Professor Russell alone were analysed for these years. In this period the reduction in

calcified lesions, which is primarily indicated by fig. 4, may have been accompanied by some reduction in the degree and extent of the fatty lesions: "numerous" or "large" or "confluent" fatty lesions were more commonly reported in 1935–39 than in 1944–49, and minor fatty lesions more commonly in 1944–49 than in 1935–39.[12] But the categories used are not precise enough to show whether there was a disproportionate decrease of the calcified lesions among all the lesions sufficiently mature to form a potential basis for local thrombosis. And, in general, such estimates approximate to the "qualitative" category that has hitherto been avoided in this investigation. As regards the main trend of the investigation, the internal consistency of the findings is reassuring in view of the several changes in staff and the gradual amplification of the reports: none of the 39 separate sex-age groups based on 2535 observations from 1919–23 to 1944–49 exceeded in advanced atheroma the corresponding groups of 1908–13.

Recalling the possibility of a "seesaw" effect, it can again readily be shown that improvement in the diagnosis of coronary thrombosis, &c., will not explain away the main trend reported. Simple "book-keeping," and the addition of all the cases of table I to the figures of tables IV and V, will not make good the substantial and particularly interesting decline of atheroma noticed in 1919–23, for instance. But there is a limit to the value of such largely circumstantial evidence, as of the internal consistency of the material, or the logical consistency of the various arguments; and what is needed is further *independent* data.

Public-health Aspects

Three plagues seem to have visited the middle-aged men of this century: peptic ulcer, cancer of the bronchus, and coronary thrombosis. There is little as yet to relate them but tobacco, and this is still of doubtful importance in two. Coronary thrombosis is the most lethal of the three, and, with hypertension, may possibly be the leading cause of death today. The ageing of the community partly explains its greater frequency, but too much is often made of this. In the past forty years the numbers eligible by age for angina pectoris, for instance, have little more than doubled. Over the same period the number of doctors has increased almost as much. Speaking broadly, therefore, each doctor should be seeing on an average about the same number of cases as forty years ago—the problem of recognition apart. This is not borne out by general experience. Of course it may be that those now living to middle age are qualitatively different; they have survived, or been preserved through, hazards that would previously have been mortal. Consequently they may be in some way constitutionally more liable than their coevals of forty years ago to succumb to diseases that are prevalent, including coronary heart-disease. The fall which is occurring in death-rates at all ages might be partly due to the fact that fewer diseases are prevalent. As yet there are no satisfactory methods of investigating this kind of problem.

A main task of public health is to reduce coronary heart-disease and other disorders, and its policies must be based on available knowledge of the causes. Today the only hopeful approach to prevention is by controlling the main predisposing condition, coronary atheroma, and this may need to be radical if it is to achieve its object. Public health has some experience with this kind of problem, or at any rate with its nutritional aspects. There is evidence of geographical, and possibly also of ethnic and class, variations in the incidence of atheroma (Bjørnsson 1941, Cowdry 1933, Gordon et al. 1939, *Psychosomatic Medicine* 1945, Steiner 1946). In recent years a varied group of nutritional disorders has become less common for various periods—e.g., gout, cirrhosis of the liver, diabetes, gall-bladder disease, vesical calculus, chlorosis, and rickets. It has become possible to frame national food policies; though little is yet solved of the problems of health education in a subject like obesity. At the least, the possibility of such a decrease as fig. 4 illustrates, reinforces current scepticism about the importance of heredity and "biological" ageing in determining the severity of atheroma, and suggests that there may be an opportunity for rational preventive medicine in this central health problem of an ageing population.

Disease, however, is commonly the product of many contributory biological and social factors, as well as of its more immediate conditions and causes, and these factors must also be known. This is a main area of epidemiology, the study of disease as a group phenomenon in the community, and of its preference for particular ages, occupations, economic classes, and environmental situations. Knowledge of such factors may point to more proximate ones, whether predisposing or precipitating; but even basic facts of the prevalence of coronary thrombosis are lacking (Cassidy 1946, Hedley 1939, Johnston 1936, Proceedings of the First National Conference on Cardiovascular Disease 1950, White and Ferrero 1949, Yater et al. 1948). Moreover with new health problems new indicators of what is happening in the community are needed. The time is probably ripe for the experimental application of the tried techniques of public health to this kind of problem. Coronary heart-disease could, for example, be "notified" to some public-health departments; and, in conjunction with sociomedical surveys, this procedure might be valuable in following up "hunches" about ætiology that are now popular. At present the main source of information must be the mortality-rates, and cardiovascular disease of middle and old age is, unfortunately, one of the darkest areas of vital statistics. (The currently certified death-rates from hypertension in particular reflect little credit on our medical schools.) There is already a case for field inquiry into the meaning and quality of the certification of these conditions, as a preliminary to an educational campaign, though it may be worth waiting to see what new information comes from the introduction of the latest International List. It is only possible to speculate now about the significance of the slowing-up of the increase in the mortality in England and Wales during the recent war (fig. 1), a movement noticed also in Scandinavia and Germany (Lindgren 1950, Strom 1950, Closs and Dedichen 1949). Hospital statistics for this period are more than usually obscure. There may well be a clue here to the nutritional relations of coronary thrombosis (and/or hypertension) or to the part played by psychological influences.

The present study suggests also that greater use could be made of necropsy material in epidemiological study. In the case of coronary heart-disease it would be relatively simple to organise some system of ascertainment of spontaneous rupture of a ventricle in the elderly. This might be a useful indicator (and it might also have the advantage of bringing forensic medicine closer to the rest of medicine). More obviously, measurements of the prevalence of coronary atheroma in the population are needed, and the investigation now reported was undertaken primarily in an attempt to demonstrate their feasibility. At least it has yielded a provocative picture of changing prevalence over the years. It seems a pity that the consequences of the epochal "experiment of opportunity" carried out by war and post-war food policy have not yet been assessed on an adequate scale in terms of arteriosclerosis, of cerebral and coronary atheroma, or, more precisely, as the amount of lipoid in

12. Standardised rates of "early" atheroma at the age of 50–69:

	1935–39	1944–49
Major fatty lesions		
Male	35·2%	31·0%
Female	25·1%	23·4%
Minor fatty lesions		
Male	40·9%	49·5%
Female	60·8%	65·1%

"Not stated" cases were ignored. The few with no coronary atheroma were included in the minor fatty lesions.

the abdominal aorta, for instance. Nor has any attempt yet been made to relate this fundamental pathology of ageing to the recent remarkable decline in the death-rates of older people (British Medical Association 1950). There seems no reason, perfectionism apart, why it should not be possible in ten years' time, and again in twenty, to provide a comprehensive account of atheroma, both the degenerative lesions and the occlusive, with much finer criteria than was possible in this retrospective study. If a sufficient number of morbid anatomists coöperated, it may be possible to make such judgments by sex and age, by economic status and nature of occupation, by social and medical history, and even internationally. Such an approach is well established in other fields, and valuable knowledge has already been gained from necropsy material about pulmonary tuberculosis and peptic ulcer. Meanwhile the 1944–49 parts of tables II and III provide a limited estimate (because of the restricted sample and the simplicity of the classification) and a conservative one (because severe hypertension and coronary heart-disease are deficient in the sample) of the prevalence of coronary atheroma in the population today.

Summary

The recent history of coronary disease has been considered.

Clinical experience and the Registrar-General's tables suggest that coronary heart-disease has increased, independent of the ageing of the population and improved diagnosis.

A sample study of coroners' records suggests that spontaneous rupture of a cardiac ventricle in the elderly is similarly occurring more often.

An analysis was made of the necropsy records of the London Hospital, where the coronary arteries as well as the myocardium have been routinely examined since 1907–08. Some 6000 reports from these years to 1949 were studied, relating to both sexes and to ages 30/35–69 inclusive.

These reports show about a sevenfold increase from 1907–14 to 1944–49 in the number of cases of coronary heart-disease. They suggest that coronary thrombosis and myocardial infarction were rare before the first world war and have since become common—i.e., that as a common disease they are new and not merely newly recognised. The initial and biggest increase in this series took place towards the close of, and in the early years after, the first world war.

An attempt was next made to estimate the prevalence of coronary atheroma in the population from these records. They showed a substantial decrease of advanced coronary atheroma, as defined mainly by the report of calcified lesions in the arteries, between 1908–13 and 1944–49. The decrease was seen in all the relevant sex, age, and pathological categories (including hypertensive) studied. It occurred in two phases that seemed to be connected with the two world wars.

Some implications of these contrasting trends are discussed—e.g., that coronary thrombosis and heart-disease may not be simple and direct functions of the atheroma. Possible nutritional relations of the decrease of the atheroma are considered, together with their relevance to the health of an ageing population.

With new problems of community health, new indicators of what is happening are needed. This exercise in documentary research illustrates one kind of contribution that social medicine, on its epidemiological side, may be able to make.

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AN ASSESSMENT OF EXTRAPERITONEAL CÆSAREAN SECTION

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INTRA-PARTUM intra-uterine infection is not so common today as it was twenty years ago. Nevertheless a steady stream of patients either frankly or potentially infected as a result of either protracted labour or interference under adverse conditions still continues to flow into the obstetric beds of the specialist hospitals.

Our improved methods of antenatal care and our better understanding of the mechanics of labour have undoubtedly reduced the number of such cases; but the problem of how to treat them remains as difficult as ever, and the outcome for the mother and child leaves much to be desired.

Chemotherapeutic agents and antibiotics have undoubtedly improved the immediate results so far as the mother is concerned, but they have not reduced the number of stillbirths. It is far too early for us to assess how the long-term results due to infection subsequent to trauma inflicted during a difficult vaginal delivery have been affected by these agents.

A search, among the possible alternative methods of treatment of the difficult obstetric case of this type, for a means whereby the maternal mortality and morbidity, together with the total fœtal loss, could be reduced led one of us (F. R. S.) in 1940 to embark on a series of extraperitoneal cæsarean sections. This series has now reached a total of 52 cases and, although this is a small number (the incidence has been only 1 per 1000 deliveries), the results have been extremely encouraging.

ALTERNATIVE METHODS OF TREATMENT

Sedation

Sedation is the generally accepted routine method of treating uterine inertia, and it is usually effective. Nevertheless there remain cases in which no response is obtained, uterine motility is persistently sluggish, the risk of infection steadily increases, and all too often the fœtus dies before delivery by the vaginal route is possible. Sedatives were given in the early stages of labour in most of the present series.

Oxytocics

Œstrogens, vitamin B_1, and calcium may all improve uterine contractions, provided there is no cephalopelvic disproportion, but their action is uncertain. Reid (1946) has studied the use of dilute solutions of 'Pituitrin' in an attempt to improve the strength of uterine contractions and expedite delivery. In cases in which labour had lasted more than twenty hours before treatment was started only 8·6% had normal deliveries and 12·9% required a cæsarean section. Reid does not mention any maternal mortality and cites only a corrected fœtal mortality of 116·5 per 1000. In a similar series (Stone 1950) 13 labours of over twenty hours' duration were treated in a like manner with 1 fœtal death and no maternal fatality. There were but 2 spontaneous deliveries, 10 required operative vaginal delivery, and 1 a cæsarean section.

Bradford et al. (1949) concur in this and state that after thirty hours' labour there is a rapidly diminishing likelihood of spontaneous delivery, 48% requiring major operative delivery. Obviously oxytocics do not yet provide a solution to our problem.

Cervical Incisions

The incision of an incompletely dilated cervix, followed by forceps delivery, is a mutilating operation in which severe trauma is blindly inflicted on the woman, who runs the immediate risks of shock, hæmorrhage, and acute infection, and, all too often, becomes in later life the victim of chronic gynæcological disabilities. The injury inflicted on the cervix must also be held responsible, at least in part, for the secondary sterility so commonly found among patients thus operated on. The risks incurred by the fœtus during this operation are not negligible. Douglass and Graves (1948) report in such cases a maternal mortality of 1·9% and a gross fœtal loss of 24%.

Craniotomy

Craniotomy will continue to be the elective method of treatment in those cases in which the fœtus has already died and can be delivered per vaginam without undue injury to the mother. What of the case in which the fœtus is still alive, a vaginal delivery without some form of destructive operation is impossible, and the risks of peritonitis resulting from a transperitoneal cæsarean section are too great for it to be undertaken? Must the fœtus be sacrificed?

There is the further problem of the case in which the child is already dead, a vaginal delivery is impracticable without unwarranted injury, and early delivery is necessary because of the mother's condition.

Embryotomy does not solve these problems. Baird (1936) reported a maternal mortality of 7·2% as a sequel to these procedures.

Transperitoneal Cæsarean Section

The classical operation need not be considered in these days; it already stands condemned. It remains only to report the results of the transperitoneal lower-uterine-segment operation. Marshall (1949) reports that cases in labour for over forty-eight hours without interference carry a maternal mortality of 2·49%; interference raised this figure to 4·54%, with a gross fœtal loss of 160 per 1000.

Cæsarean Hysterectomy

Cæsarean hysterectomy entails much the same risks as a transperitoneal cæsarean section and, as a further disadvantage, robs the survivors of future childbearing —an important point, since most of them are primigravidæ. Dieckmann (1948) reports that he performed this operation in 33 cases in which infection was suspected; there were 6 cases of peritonitis, with 1 death.

Extraperitoneal Cæsarean Section

A consideration of the above methods shows that none provides a satisfactory answer to our problem, and naturally one seeks a happier solution. In this spirit we will analyse the possible advantages and drawbacks of extraperitoneal cæsarean section.

This is a lower-uterine-segment operation and therefore has all the advantages attached to such a procedure. It has yet further advantages: there is no intraperitoneal spill of infected liquor, and any risk of postoperative seepage through a peritoneal suture line is eliminated; the likelihood of postoperative ileus is reduced; and there should be no trouble from postoperative adhesions. The operation area can readily be treated with sulphonamides and antibiotics and it is easily drained.

This operation is better than a difficult vaginal procedure. It provides easy access to the uterus, with a clear view of the operation field, permitting adequate hæmostasis and accurate coaptation of the edges of the uterine wound. In discussing the merits of this operation one must not overlook the much improved fœtal salvage (see below).

Various objections have been raised to the procedure:

1. The technique is difficult.

2. The operation carries a serious risk of injury to the bladder and ureters.
3. The whole object of the operation may be nullified by injury to the peritoneum.
4. The operation opens up the extraperitoneal tissues, which are supposed to have less resistance to infection than the peritoneum.

The first two objections have no real substance, since it is not intended that the occasional surgeon should tackle these difficult obstetric problems: to the experienced pelvic surgeon the operation is one of ease—indeed a source of pleasure.

Any gross invasion of the peritoneal cavity during the operation should be readily avoided, but it must be admitted that, from time to time, close inspection of the peritoneal flap will reveal minute perforations. These must be closed by simple ligation before opening the uterine cavity, so that the full benefits of the procedure may be retained.

The last objection must have been raised under a serious misapprehension; the Waters (1940) operation merely involves fascial planes that are of necessity opened up during the course of the commoner transperitoneal lower-uterine-segment operation and therefore it should not involve any more risks.

TECHNIQUE

Various techniques have been devised. Thomas (1870), of New York, was the first to perform the operation, and he recorded (Thomas 1878) 5 cases, with 2 maternal deaths and the loss of 1 fœtus. Latzko (1908, 1909) devised an improvement that remained the method of choice until recently; this gave a rather inadequate exposure of the lower uterine segment and was technically difficult if the child was large.

A very great advance was made when Waters (1940) and Ricci (1940) introduced their modification of the old Physick-Sellheim technique. Waters's operation gives an excellent exposure of the lower uterine segment, but his method of dissecting the fascial peritoneal flap from the superior bladder wall can prove both difficult and tedious. By modifying the Latzko operation, Norton (1946) obtained a better exposure with less risk of injuring the peritoneum. Bourgeois and Phaneuf (1949) advise a bilateral paravesical approach to the lower uterine segment; this modification makes it easier and quicker to dissect up the peritoneo-fascial flap from the bladder, while retaining the advantage of the wide exposure of the lower uterine segment provided by the Waters method.

We now use the technique of Bourgeois and Phaneuf. No attempt will be made to detail the method, but experience has warned us of certain dangers and difficulties that may be readily avoided. Brief mention of these points may help others to avoid the errors we made.

In opening the abdomen great care must be exercised; for it is very easy to open the peritoneal cavity inadvertently, particularly at the upper end of the incision. The anterior rectus sheath should be incised at the lower angle of the wound, and the peritoneum and extraperitoneal fatty tissues should be stripped back with the fingers as the sheath is laid open with scissors. The bladder is emptied before the operation, and nothing is gained by filling it with fluid, coloured or otherwise.

If the surgeon stands on the patient's right side, a transverse incision through the transversalis fascia over the bladder is made and extended laterally to the left as the assistant retracts the left rectus abdominis muscle. This leads directly to the paravesical triangle, which is bounded above by the peritoneal reflexion, internally by the obliterated hypogastric artery running along the side of the bladder, and externally by the left uterine artery. The floor of the triangle is covered by the so-called "chicken fat," and, when this is wiped away, the pre-cervical fascia is exposed. Division of this fascia allows the bladder to be rapidly mobilised from the uterine wall, and leads on to the dissection of the peritoneo-fascial flap from the superior bladder wall. This is easy if the dissection is carried out with a sharp scalpel while the tissues are kept under tension; the urachus will have to be divided between clamps close to the bladder.

The peritoneal flap is inspected for perforations at this point in the operation. These are readily detected by the leakage of intraperitoneal fluid, and are easily and safely closed by simple ligation (no purse-string sutures). The bladder should then be examined and any weak points in its wall oversewn with catgut.

At this stage of the operation the freely mobilised bladder is pushed down behind the symphysis pubis out of harm's way, thus exposing the lower uterine segment and cervix in readiness for the usual "trapdoor" uterine incision.

The delivery of the fœtal head out of the pelvis may be difficult, but this momentary embarrassment may be obviated by the use of the Trendelenburg position.

The uterine incision is sutured in the usual manner with no. 5 monofilament 'Nylon,' and the same material is used in closing the abdominal wall. The retrovesical area is treated with proflavine (1%) and sulphathiazole (99%) powder, and the space is drained for forty-eight hours.

The premedication given to the mother has been atropine gr. $^1/_{100}$. Spinal analgesia induced with heavy 'Nupercaine' $^1/_{200}$ in 6% glucose has been the anæsthetic procedure of choice in 47 out of the 52 cases.

TYPE OF CASE CHOSEN

The modern operation of lower-uterine-segment cæsarean section is safe for the mother in cases of election and also when performed early in labour. These favourable results are not obtained in the infected or potentially infected patient. For this reason Dieckmann (1946) laid down certain criteria by which the dangerous case could be recognised. He advises either vaginal delivery or cæsarean hysterectomy for such patients. His contra-indications to transperitoneal cæsarean section are as follows:

1. Labour over twenty-four hours.
2. Membranes ruptured over twenty-four hours.
3. Attempts at delivery by forceps or by version.
4. Induction of labour by bag, bougie, or pack.
5. Evidence of uterine infection.
6. More than six vaginal examinations.
7. More than twelve rectal examinations.
8. Dead or damaged fœtus.

We have chosen extraperitoneal cæsarean section as the preferable mode of delivery when faced with these examples of dystocia.

The cases in the present series fall into two main groups: (1) those in which uterine inertia had persisted so long as to render the patient potentially or frankly infected, the cervix had not yet reached the stage of full dilatation, and the possibility of a successful vaginal delivery of a living infant had become remote; and (2) those in which cephalopelvic disproportion or malpresentation precluded the vaginal delivery of a living child, whether or no the stage of full cervical dilatation had been reached, and in which outside interference had rendered any form of transperitoneal cæsarean section dangerous.

Of the 52 cases 42 (80%) were primigravidæ and 10 (20%) multiparæ. Of the 10 multiparæ only 3 had living children, pregnancy having ended in stillbirth after difficult forceps delivery in 3 cases and in abortion in the remaining 4. Ages ranged from 19 to 43, average 29·8; 26 women (50%) were aged over 30.

In 10 cases definite pyrexia was noted on admission to hospital. One of these women had an intra-uterine

Clostridium welchii infection, and yet was delivered of a living child.

Uterine inertia was the main indication for operation in the greater part of the series, labour having been in progress for over forty-eight hours in 33 cases (63%) and for over thirty-six hours in 44 cases (85%). Fœtal distress was established in 34 cases (65%).

Of the fœtuses, 47 presented by the vertex and, as might be expected, there was a high incidence of occipito-posterior positions. The breech presented in 2 cases, the face in 1, the brow in 1, and there was 1 transverse lie. Definite cephalopelvic disproportion was present in 4 cases, one of which was further complicated by prolapse of the umbilical cord.

In 9 cases (17%) there had been operative interference per vaginam before section was undertaken; yet in only 1 case—that in which the face presented and attempts to correct a mentoposterior position had failed—was the cervix fully dilated.

RESULTS

Maternal

There were no maternal deaths, and no patient developed peritonitis. At operation the peritoneum had been buttonholed in 2 cases, and the bladder opened in 1. None of these cases presented undue difficulty during the puerperium.

Puerperal pyrexia of notifiable degree developed in 9 patients (17%): in 6 of these it was due to an intra-uterine infection, in 2 to a *Bact. coli* urinary infection, and in 1 to an enteritis caused by *Salmonella aertrycke*.

There was a high incidence (46%) of minor urinary infections, which, however, did not give rise to notifiable pyrexia and rapidly settled on treatment. One patient developed an internal saphenous thrombophlebitis, and mild wound sepsis delayed healing of the abdominal incision in 2 cases.

Fœtal

The number of children lost was 4 (7·6%). There was 1 stillbirth, the mother being an elderly primigravida whose pregnancy was complicated by essential hypertension. Of the 3 neonatal deaths the first was due to atelectasis in a baby weighing 7 lb. 13 oz. whose mother had had pre-eclampsia and accidental hæmorrhage; the second was in an infant weighing 3 lb. whose mother had cholelithiasis and acute cholecystitis; and the third was in a child weighing 5 lb. 8 oz. who died on the seventh day from a non-traumatic cerebral hæmorrhage, and whose mother had had nephrolithiasis with renal failure at the time of delivery.

Well-marked fœtal distress had been noted before operation in the case of the stillbirth and the death from atelectasis.

Remote Sequelæ

No urinary fistulæ or any persistent disturbance of bladder function resulted from the operation. Mangone (1948) made similar findings.

There were no chronic wound sinuses, but 2 patients later developed incisional herniæ.

Subsequent Obstetric History

Up to the time of writing, 17 patients have, between them, gone through 22 further pregnancies after the operation. Of these pregnancies 16 ended in spontaneous delivery of living infants and 6 were submitted to further cæsarean section. In no case was a further cæsarean section undertaken because of doubts about the security of the uterine scar, and all the scars seen at a subsequent operation were found to be sound.

CONCLUSIONS

The objective of every obstetrician is to conduct the woman safely through her pregnancy and labour without damage to herself or to the baby. Unfortunately, in a small proportion of cases difficulties arise that make this ideal hard to attain, and, in the past, hazardous vaginal deliveries have been undertaken, with disastrous results to the child and permanent injury to the mother.

We consider that many of these failures can be eliminated by the use of extraperitoneal cæsarean section, and we are fortified in our belief by the results we have obtained. Similar good results have been reported by several American workers (see table).

RESULTS OF EXTRAPERITONEAL CÆSAREAN SECTION IN INFECTED OR POTENTIALLY INFECTED PATIENTS

Reference	No. of cases	Maternal mortality	Fœtal mortality	
			Stillbirths	Neonatal deaths
Keettel and Randall (1949)	26	0	1	2
Levine and Weiner (1947)	25	1	2	0
McCall (1949)	18	0	4	1
Daichman and Pomerance (1944)	76	0	2	0
Norton (1946)	53	0	4	..
Present series	52	0	1	3
Total	250	1 (0·4%)	14 (5·6%)	6 (2·4%)

McCall's 18 patients were all grossly infected. We have had to reject many reported series of cases of extraperitoneal cæsarean section because the operation had been done on patients who did not fulfil Dieckmann's criteria of potential infection. In yet other reports the information was too scanty for us to form an opinion.

There is a definite trend nowadays towards a broadening of the range of indications for cæsarean section, and this change of attitude has been justified by the results. The extraperitoneal approach to the uterus permits a further justifiable extension of the indications already accepted for cæsarean section, and at the same time leads to a reduction in the total incidence of the operation, because the surgeon may safely allow a trial of labour to proceed far longer than is the present custom.

SUMMARY

The alternative methods of handling the labour of women who are potentially or actually infected are reviewed, and the advantages and disadvantages of extraperitoneal cæsarean section are discussed. The operative technique is outlined.

52 mothers were operated on without fatality. There was 1 stillbirth and 3 neonatal deaths.

The results obtained warrant the inclusion of this operation in the armamentarium of every obstetrician.

ADDENDUM

Since writing this article we have performed the operation on 6 further occasions; the indication in all cases was prolonged labour, with fœtal distress in 3. There was no maternal death and no case of puerperal pyrexia. All the babies survived.

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THE OXYGEN PARADOX

EXPERIMENTS ON THE EFFECTS OF OXYGEN IN HUMAN ANOXIA

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THE giving of oxygen in anoxic states has sometimes had adverse effects, especially in the treatment of chronic cor pulmonale. Also Comroe and Schmidt (1938) found that, after emergency tracheotomy for obstruction of airways, symptoms appeared which seemed to be attributable to the temporary cessation of cerebral circulation following sudden reoxygenation of the arterial blood.

The mechanism of these disturbances differs in certain ways from that of the true paradox phenomenon. The latter name was first applied by Ruff and Strughold (1939), and before this the condition had mostly passed unrecognised. Briefly, when a person is anoxic and is suddenly supplied with an abundance of oxygen, his condition may rapidly worsen, and in severe cases there may be clonic muscular spasms or unconsciousness for up to 30 seconds. Quite often the condition is more transient and it may pass unnoticed unless brought to light by special tests.

The incidence of this paradox reaction in aviation has been emphasised by Schwarz and Malikiosis (1939), who described the case of a pilot who, having interrupted his supply of artificial oxygen to attend to a mechanical defect at 20,000 ft., collapsed unconscious when he began to breathe oxygen again. Noell and Roeder (1943) demonstrated the reaction in decompression-chamber tests with Lottig's writing test. They noted in several cases a striking deterioration in muscular co-ordination and mental faculties on breathing oxygen again after experimental anoxia. The general deterioration ensued just after the circulation-time would have indicated full arterial reoxygenation, and symptoms could still be detected up to 40 seconds later. Noell et al. (1943) obtained an electro-encephalogram in a typical case.

Baxter et al. (1943), studying syncopal reactions in anoxia and their relation to epilepsy, found that some persons lost consciousness 30 seconds after breathing oxygen again, but later they assumed that these persons would have collapsed in any case if the anoxia had been allowed to continue longer. Stavraky (1944) attributed this collapse to the direct depressing effect of oxygen on the central nervous system and to sudden constriction of cerebral blood-vessels caused by inhalation of oxygen in acapnic states.

The physiology of this crucial postanoxic recovery stage has been inadequately covered, and the transient nature of the phenomenon has only served to increase the difficulties of investigation. The paradox reaction is more easily demonstrated in normal healthy people, and is of particular interest in relation to the use of oxygen by aircrew, since several cases have been described recently which resulted from resumption of the oxygen supply after sudden anoxia due to very rapid decompression to high altitudes.

The symptoms seem to be entirely due to a profound disturbance in the central nervous system. The ensuing cardiovascular collapse may mask many of the primary nervous symptoms, which in mild cases consist of slight tremblings, clonic muscle cramps, malformation of letters in writing tests, and deterioration of logical thinking. The onset of symptoms coincides with a change in facial colour following peripheral dilatation. Noell (1947) states that in severer cases, leading to convulsions and unconsciousness, the convulsion may be a manifestation of latent epilepsy and he localises the symptoms to the extrapyramidal system and the hypothalamus.

Before investigating this reaction it was necessary to assess quantitatively its true relation to the return of oxygen into the circulation. A modified form of writing test, which gave a continuous indication of physical and mental integrity or impairment, was applied to a group of healthy people, and the results were correlated with the cardiovascular and blood-pH changes found in succeeding experiments.

WRITING TEST

It was considered necessary to use a technique which would detect immediately any sudden mental or neuromuscular change, and a modified form of Lottig's writing test appeared satisfactory. Sixty anoxia tests were carried out on 52 persons, mostly healthy young aircrew and members of the laboratory staff. The experiment was divided into two parts. The first group of 30 persons were anoxic for 4 minutes in a large decompression chamber at a simulated altitude of 20,000 ft., and the second group, consisting of 8 of the first group and 22 other persons, for 5 minutes at the same height. Standard drill was adhered to for the decompression-chamber runs, several minutes being allowed at altitude on pure oxygen before the anoxia test was started. As soon as the subject's oxygen tube was disconnected and his oxygen supply was turned off he was instructed to

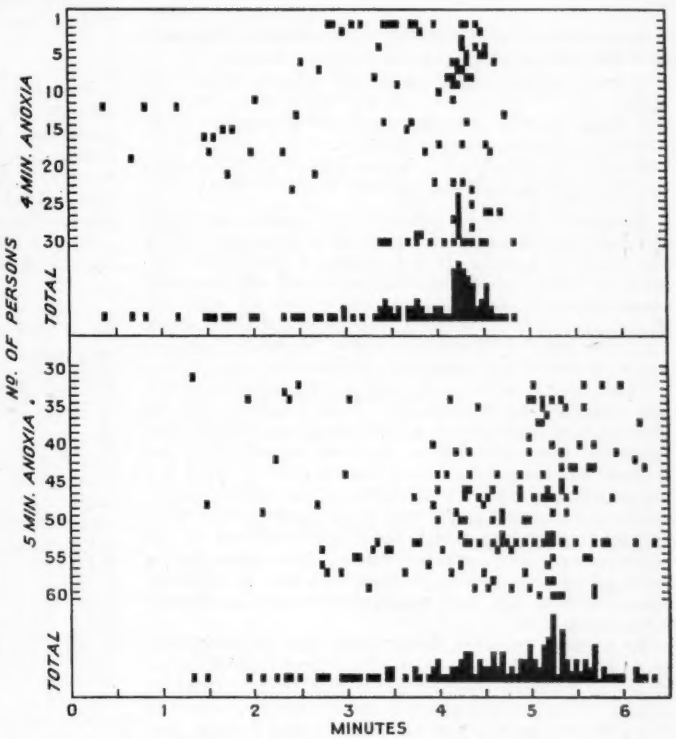

Fig. 1—Errors made in 3-second periods in writing test by two groups of persons subjected to anoxia and then reoxygenated.

start writing. Full chamber ventilation was used, and the observer maintained strict silence so that the subject's attention should not be diverted. At the end of the anoxia period the subject's oxygen tube was reconnected without his knowledge. At the end of the experiments the individual errors were plotted on a time scale, and the incidence of errors in each group was compared. At the same time any subjective symptoms were noted by the observer, but these were not taken into account in preparing the final graph (figs. 1 and 2).

Errors

This method of recording reactions did not give a complete picture of the changes taking place when the oxygen supply was resumed. Subjective symptoms could not be recorded on the graph, and for this reason it is difficult to assess the number of persons showing an

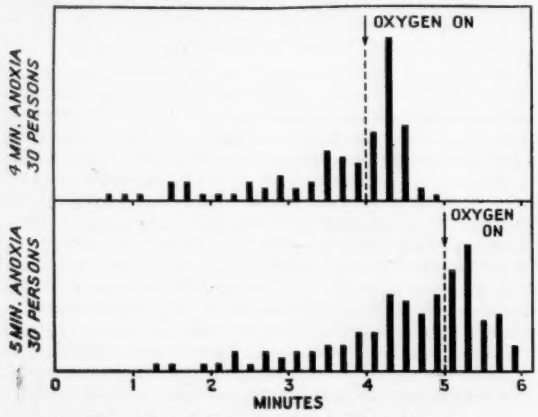

Fig. 2—Errors made in 12-second periods in writing test.

unmistakable paradox reaction. The subjects fell broadly into four categories during the recovery stage:

1. Those showing both errors and symptoms (5). See table.
2. Those showing symptoms alone (3). See table.
3. Those showing errors alone (5).
4. Those showing gradual recovery from anoxia without any detectable paradox reaction (39).

Categories 3 and 4 overlap and cannot be easily differentiated unless the errors show grouping during the recovery period. If it is assumed that three consecutive errors after the 9th second of the recovery stage, without previous gross errors, are an adequate demonstration of the paradox reaction, at least 13 persons, including those with symptoms also, showed a paradox reaction after either 4 minutes' or 5 minutes' anoxia.

If all the errors made by the 4-minute anoxia group are totalled over 3-second (fig. 1) or 12-second (fig. 2) periods, there seems to be a considerable increase in their incidence from the 9th to the 18th second after the oxygen was turned on. This is more obvious when the graph is compared with the errors of the second group, where the anoxia was allowed to continue to the end of the 5th minute, by which time practically all of the second group were making errors. The peak during their subsequent recovery stage was not so obvious, since reactors and non-reactors were not adequately differentiated.

To examine whether these results provide statistical proof of the paradox reaction, the sets of frequencies of errors in different time intervals may be compared as wholes. The comparisons will be between the 4-minute and 5-minute anoxia groups. Figs. 1 and 2 show that the number of errors increased during a short interval after resumption of the oxygen supply. It may be

SYMPTOMS AND ERRORS ON RESTORATION OF OXYGEN AFTER ANOXIA

Subject no.	Symptoms	Time of onset after return of oxygen (sec.)	Errors
1	Faintness	30	++
2	Felt faint and dizzy	20	None
3	Confusion and "alcoholic glow"	20	+
4	Faintness, "queer"	20	+
5	Faintness	18	None
6	Orange visual aura	32	++
7	Dizziness	16	None
8	Complete confusion lasting 17 seconds	15	+

presumed that, if oxygen had not been given, the frequency of errors for the 4-minute group would have been about the same as that for the 5-minute group, since the trends for the two when both were anoxic—i.e., up to 4 minutes—are very similar. The mean numbers of errors for the two groups of 30 persons each from 4 minutes 9 seconds to 4 minutes 24 seconds were 1·10 for the first group and 0·47 for the second. The probability that the difference 0·63 was due to chance is shown by the t test to be less than 0·01. This can be accepted as good evidence that the increased number of errors following the resumption of the oxygen supply was not due to chance fluctuations.

Symptoms

Of the 52 persons tested 8 had sensations varying from simple confusion to impending collapse. No person became unconscious. The accompanying table gives a summary of the cases.

In most cases there was also a perceptible change in the handwriting after the 9th second of recovery. Writing speed increased above normal and letter formation deteriorated. Irregularly shaped numerals indicated tremors and loss of control of fine movements.

CARDIOVASCULAR CHANGES

8 persons were subjected to anoxia at a simulated altitude of 20,000 ft., and their blood-pressure and peripheral blood-flow were simultaneously recorded during the progress of the anoxia and the subsequent recovery. 3 of these persons repeated the experiments later, and 2 also underwent 10 minutes' anoxia at the same altitude.

In each experiment the subject was seated in an armchair, and the lead from his oxygen mask was attached

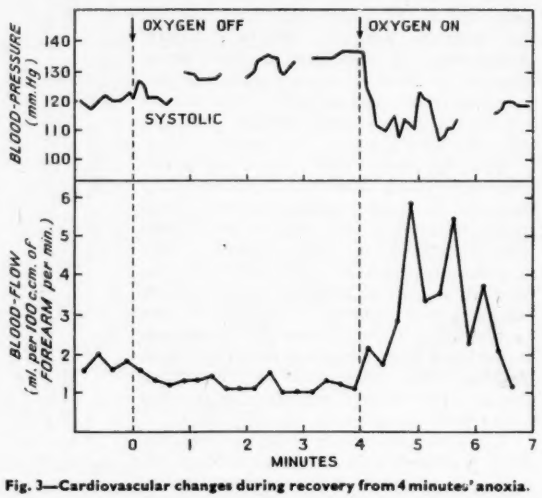

Fig. 3—Cardiovascular changes during recovery from 4 minutes' anoxia.

to the back of his chair so that the observer could connect and disconnect the oxygen without the subject's knowledge. The blood-pressure recorder was attached to the subject's right arm, and the blood-flow recorder to his left. The heart-rate could be obtained from either of these recordings also. At the end of each period of anoxia each subject was given 100% oxygen.

Method.—The blood-pressure was recorded continuously by a modification of a principle first described by Doupe et al. (1939). It consisted of a sphygmomanometer arm-cuff automatically blown up by an electrically operated solenoid valve actuated by signals generated from a photo-electric cell placed on a finger distal to the cuff. The cuff pressure followed the systolic blood-pressure and in this way continuous recordings were obtained. The apparatus was switched off at intervals to avoid discomfort to the subject. Forearm blood-flows were recorded again automatically at a rate of 6 a minute by intermittent venous-occlusion plethysmography. This apparatus was designed by Kerslake (1949).

Results.—Blood-pressure and heart-rate seemed to begin to change before symptoms referable to the central nervous system could be detected. The classical blood-pressure rise of 15–20 mm. Hg during anoxia was

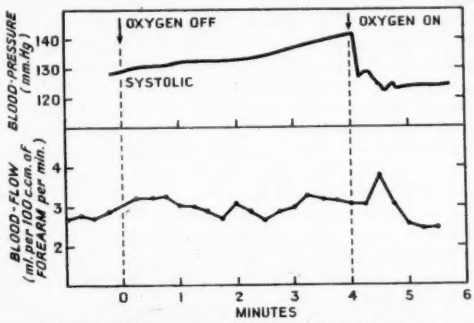

Fig. 4—Average blood-pressure and peripheral blood-flow in 7 persons during recovery from 4 minutes' anoxia (excluding case shown in fig. 3).

followed by a fall to normal levels in every case, beginning within 2–4 seconds after the return of oxygen. This could not possibly have been a cerebral effect. In three persons the blood-pressure subsequently fell to subnormal levels (about 105 mm. Hg) and since it was associated in these cases with a considerable rise in peripheral blood-flow it was sufficient to produce faintness, dizziness, and reddening of the vision. In no case did the pulse-rate fall below the average resting level. The greatest fall in blood-pressure always established itself by the 35th second and only appeared to be significant when associated with a coincident increase in peripheral blood-flow. None of the 8 persons lost consciousness. The most interesting case is shown in fig. 3. This subject had felt faint and confused also during a writing test. Fig. 4 shows the average blood-pressure and peripheral blood-flow in all the subjects except this one. Blood-flow showed no significant change during anoxia lasting 4 or 5 minutes, and a significant increase did not begin until 15 seconds after the return of oxygen, the peak appearing at the 30th second.

BLOOD pH

It was thought that a sudden change in pH of the arterial blood brought about by sudden reoxygenation under these conditions, if coinciding with the nervous phenomena, might be the initiating factor. It has also been well established that changes in the excitability of various portions of the reflex arc bear a direct relation to blood pH. The magnitude of the pH change in

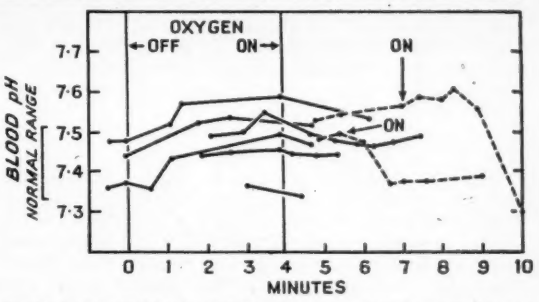

Fig. 5—Changes in blood pH of 8 persons recovering from anoxia at a simulated altitude of 20,000 ft. Interrupted lines show results obtained with 5½ and 7 minutes' anoxia in 2 persons. The other 6 persons underwent 4 minutes' anoxia.

susceptible cases was not known; so 8 persons were investigated.

Method.—Arterial blood samples were withdrawn anærobically at short intervals, and their pH was determined during and after anoxia at a simulated altitude of 20,000 ft. The successive blood samples were immediately sealed off on removal and cooled to 0°C, and the measurements were made at 38°C within an hour of removal in a new type of miniature glass-electrode cell with a capacity of 0·3 c.cm. The accuracy of the glass electrode was shown to be ± 0·01.

Results.—The outcome of the experiment suggested that the pH of the blood decreased relatively slowly after sudden reoxygenation by not more than 0·04 in the first minute of recovery (fig. 5). The initial rise at the start of anoxia was not linear and seemed to follow closely the expected changes in tension of arterial carbon dioxide. Of the 8 persons 2 showed premonitory signs of fainting, but their blood-pH curves did not differ from those who had no symptoms. The well-marked pH changes found in the person subjected to 7 minutes' anoxia (fig. 5) were not shown by those subjected to 4 minutes' anoxia, and it is surprising that they were tolerated without symptoms. So this person was tested again to determine the pH changes following alterations in alveolar carbon dioxide tension at ground level. Fig. 6 shows that, in this test, hyperventilation caused the alveolar partial pressure of carbon dioxide to decrease by at least 10 mm. Hg, and the pH of the blood to increase by about 0·23, within 12 seconds. The initial fall in blood pH is difficult to explain, but might have followed a short period of apnœa after the third alveolar

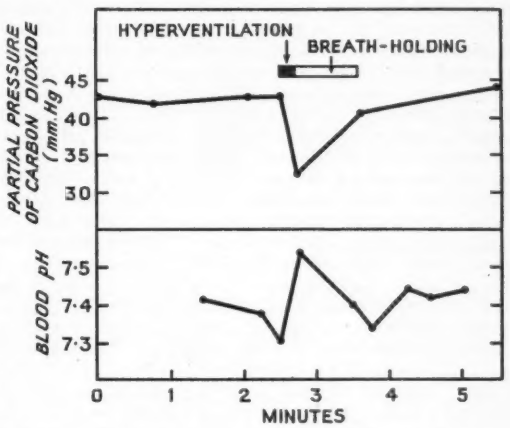

Fig. 6—Changes in blood pH and carbon-dioxide tension at ground level after hyperventilation and breath-holding in the person who had undergone 7 minutes' anoxia (see fig. 5).

sample was taken. In conclusion it can be stated that the blood-pH changes during the recovery stage from anoxia do not seem to bear any direct relationship to the oxygen paradox; reactors and non-reactors gave similar results.

DISCUSSION

The first objective change in a person suddenly reoxygenised after anoxia appears between the 9th and 12th seconds, and is predominantly a disturbance of the central nervous system, as manifested by deterioration of logical thinking, confusion, and muscular incoördination. Any classical cardiovascular collapse which may develop, however, does not become established until much later, at about the 30th second of the recovery stage, and such symptoms again come under the heading of the paradox reaction, even in the absence of any preliminary detectable disturbance of the central nervous system. The paradox reaction can be manifested by either or both of these distinct changes.

The neurological symptoms can be explained in several ways. The return of oxygen leads in every case to an immediate fall in the blood-pressure, which fall impairs the cerebral circulation and consequently increases the cerebral anoxia for a while before the brain cells fully recover from their previous state. The symptoms also appear at the same time that oxygenated blood first reaches the brain. The possibility that a Bohr effect may lead to a temporary further increase in cerebral anoxia is not supported by the findings in the last series of experiments, which indicate that the production of a paradox reaction does not bear any relationship either to the blood-pH change due to sudden reoxygenation of the arterial blood or to the change brought about by hyperventilation during the anoxia. The only other possibility is an entirely local metabolic disturbance confined to the brain cells.

The rapid fall in blood-pressure on reoxygenation after anoxia has been demonstrated independently on animals by many workers. Grandpierre and Franck (1945) demonstrated this fall in anoxic dogs 3 or 4 seconds after the return of oxygen. Similarly, von Euler and Liljestrand (1946), studying the control of the pulmonary arterial blood-pressure in chloralosed cats, showed that with the return of oxygen the fall in pulmonary arterial pressure was almost immediate and was followed about 2 seconds later by a similar fall in systemic blood-pressure. These changes were present after extirpation of the stellate ganglion and vagotomy—i.e., they were a direct effect on the lung vessels. These workers also showed that, when the lung flow was doubled, there was only a 20% increase in pulmonary arterial blood-pressure, demonstrating the great distensibility of the pulmonary vascular bed. After reoxygenation, therefore, the high oxygen and low carbon dioxide tensions exert a local dilating effect on the pulmonary vessels. This in itself would cause a sudden temporary decrease in cardiac output and fall in systemic blood-pressure, and at the same time a high partial pressure of oxygen and low partial pressure of carbon dioxide in the arterial blood would cause a similar fall in blood-pressure by its action on the aortic and carotid chemoreceptors. This change, however, would take longer to develop and would entail peripheral blood-flow changes of an equal intensity unless it was brought about by a sudden decrease in cardiac output. Such a decrease in cardiac output, from a purely dynamic aspect, could only take place if there were a coincident and temporary increase in the pulmonary vascular bed and a fall in pulse-rate as demonstrated. It may be noted that, according to Bouckaert and Heymans (1935), carotid-sinus reflexes do not affect the cerebral vasomotor tone in any active way. It seems that the blood-pressure changes are only significant contributory factors towards a fainting type of reaction when they are associated with a later increase in peripheral blood-flow. There are many factors which could give rise to the increase in blood-flow observed during the recovery, and it is difficult to determine which predominates. It is unfortunate that the subjects of the experiments were unable to perform the writing test simultaneously with the blood-pressure and blood-flow recordings during all the experiments. An accurate timing of these reactions is important in referring to work carried out by Noell and Schneider (1941), who measured femoral blood-flow and blood-pressure in anæsthetised dogs and found a decrease in femoral blood-flow with return of oxygen in anoxic animals, which was greatest after 15–20 seconds. These findings are in accordance with those of Ranke (1936), Gellhorn and Steck (1938), and McMichael (1943).

The possibility of a sudden cerebral ischæmia due to local vasoconstriction appears at first sight to be sound enough. Although Noell and Schneider (1941) state that cerebral blood-flow only follows the systemic arterial blood-pressure during anoxia, there is other evidence that high oxygen tensions in the presence of low carbon dioxide tensions cause active vasoconstriction of cerebral vessels. The electro-encephalograms obtained during the recovery stage from anoxia do not entirely support this theory. Palme et al. (1941) showed that the bioelectric changes typical of cerebral anoxia had disappeared by the end of 10 seconds after the return of oxygen. If the recovery period were associated with a cerebral vasoconstriction sufficient to cause enduring cerebral anoxia, one would expect the bioelectric manifestations of anoxia to be continued long into the recovery stage, certainly over the crucial interval from the 9th to the 15th second in the paradox reaction. Noell, Kornmueller, and Gremmler (1945) also found that the abnormal electroencephalographic waves typical of convulsive states only appeared after the classical picture of cerebral anoxia had disappeared.

It is obvious that many factors contribute to the final outcome, and a constitutional element is important in determining whether or not the nervous manifestations of the paradoxical reaction are further complicated by circulatory collapse. It seems that a person does not always produce a paradox reaction even if he has been shown to be a good reactor on a previous occasion. In the light of past experience it has been found that, providing the oxygen is turned on slowly, in all cases the risk of a paradox reaction is eliminated. No untoward effects in aircrew have been noted when this rule has been applied.

SUMMARY AND CONCLUSIONS

60 anoxia tests were carried out on 52 people at a simulated altitude of 20,000 ft. The subjects were divided into two groups, the first being anoxic for 4 minutes, and the second for 5 minutes. During the performance of a modified Lottig's writing test the incidence of errors during the recovery stages was calculated and compared.

Further experiments were made on 8 of these subjects to determine the precise cardiovascular changes during the recovery stage from anoxia. For this purpose blood-pressure, peripheral blood-flow, and pulse-rate were recorded with apparatus specially designed to give automatic and continuous records.

A further nine experiments were made to determine the blood-pH fluctuations during the course of the paradoxical reaction. The measurements were made with a new micro pH cell on intermittent arterial blood samples.

A paradox reaction to oxygen was demonstrated in 13 of the 52 subjects and seemed to begin between the

9th and 12th seconds of the recovery stage from anoxia. Initially it is a disturbance of the central nervous system, as manifested by an increase in writing test errors, which reaches its peak during the 12th second of recovery. A slight secondary rise in the incidence of errors seems to coincide with the cardiovascular changes, which are most pronounced at about the 30th second of the recovery stage. These tests have also demonstrated the onset of muscular incoördination and mental confusion developing during this period. When the duration of the anoxia is increased, paradoxical symptoms in the form of faintness also increase, but the efficiency of the writing test deteriorates when the anoxia is severe.

The late symptoms are those of a cardiovascular collapse associated with a fall in blood-pressure and an increase in peripheral blood-flow. The sequence of events is best described as follows:

Systolic Blood-pressure

(1) With the sudden return of oxygen there is an initial rapid fall within 2–4 seconds, which is most probably due to a rapid increase in the pulmonary vascular bed, impairing cardiac filling.

(2) The greatest fall in blood-pressure coincided with the greatest increase in peripheral blood-flow at about the 30th second.

(3) Restoration to normal was usually completed within 1 minute after the return of oxygen.

Forearm Blood-flow

(1) There was no significant change during the course of the 4-minute anoxia.

(2) The average curve showed a significant increase beginning 9 or 10 seconds after the return of oxygen, and this coincided with the onset of the maximum of errors.

(3) Blood-flow returned to previous normal levels within 60 seconds.

Blood pH

Blood-pH changes followed rapidly the alveolar partial pressure of carbon dioxide. The average increase in pH at the end of 4 minutes' anoxia amounted to 0·09. Return to normal levels was a gradual process, which in some persons took up to 4 minutes. There did not seem to be any correlation between the pH changes in the arterial blood and the production of a paradoxical reaction.

It is considered probable that the neurological manifestations of the paradox reaction follow a sudden impairment of cerebral circulation due to a rapid fall in systolic blood-pressure when the breathing of oxygen is started again. A constitutional element is important in deciding whether the phenomenon is terminated by a cardiovascular collapse, about 15 seconds after the initial onset of nervous symptoms. The risk of a paradox reaction is entirely eliminated if oxygen is readministered slowly.

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A METHOD OF ESTIMATING THE COLLATERAL RESISTANCE DURING OBSTRUCTION OF THE MAIN ARTERY TO A LIMB

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THE blood-flow through any limb segment depends on the local arterial pressure and the resistance offered by the peripheral vessels. In normal limbs the local blood-pressure does not differ appreciably from the central pressure, but in a segment distal to an obstruction of a main artery this is not so, since the blood must traverse collateral vessels which may present a resistance comparable to that in the periphery. In these circumstances the flow will be equal to the central pressure divided by the sum of the collateral and peripheral resistances. Since the presence of this collateral resistance is the essential functional disability in such limbs, it is desirable to be able to estimate its magnitude. In practice, as the main arterial tree becomes obstructed the peripheral resistance tends to decrease, so that measurement of the blood-flow does not allow an estimate of collateral resistance. By simultaneous measurements of flow and pressures, however, such an estimate can be made.

To illustrate the method a special set of circumstances was chosen where it was probable that collateral resistance was different in two limbs of one patient. It has been shown that cases of osteitis deformans have a greatly increased blood-flow in the affected region (Edholm et al. 1945) and that there is an increase in the size, and possibly in the number, of arteries present (Edholm and Howarth, personal communication). A patient with osteitis deformans of the right humerus, without involvement of the left humerus or of either forearm, afforded an opportunity of studying a pair of limbs in which the arterial supply was different when the main arteries were temporarily occluded.

METHOD

The method of study is shown in fig. 1. A forearm and hand were enclosed in an air-filled plethysmograph.

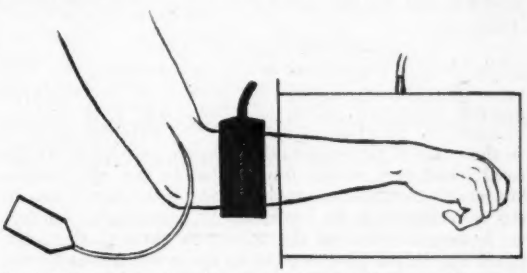

Fig. 1—Plethysmograph on forearm and hand, cuff on upper forearm, and needle inserted into brachial artery.

A narrow cuff was placed immediately proximal to the plethysmograph, just below the elbow. A needle was inserted into the brachial artery at the bend of the elbow, and the pressure recorded with a condenser manometer (Hansen 1949). The brachial artery was occluded digitally about the middle of the humerus.

PROCEDURE AND RESULTS

The experiment was designed to record the blood-flow and blood-pressure in each arm in their normal state and

in reactive hyperæmia, first with the main artery open, and secondly with the artery occluded.

Identical observations were made on each arm, and the results are shown in fig. 2. Resting blood-flow and blood-pressure were first recorded and found to be the same in both arms. Blood-flow and blood-pressure were again recorded immediately after releasing the cuff inflated to 300 mm. Hg for thirty seconds. The brachial artery was then occluded, and about ten seconds later, when the blood-pressure had fallen to a stable figure, the blood-flow was again measured and was found to be 5 ml. a minute in the normal arm and 12 ml. a minute in the affected arm. The blood-pressure in the affected arm was higher, and greater pulsations were recorded than on the normal side. After twenty seconds the forearm cuff was inflated to about 300 mm. Hg. This caused a rise in blood-pressure and an increase in pulsations on both sides, the rise in blood-pressure being relatively greater in the normal limb. During this period there was, of course, no blood-flow in the forearm and hand. After thirty seconds the cuff pressure was dropped suddenly to less than 30 mm. Hg, and the blood-flow and blood-pressure were recorded. The blood-flow increased, and

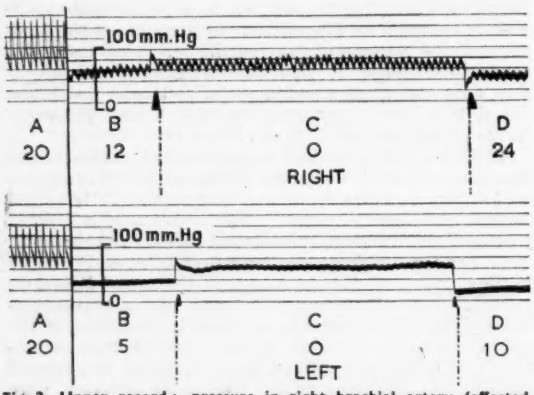

Fig. 2—Upper record: pressure in right brachial artery (affected limb). Lower record: pressure in left brachial artery. The arteries are unobstructed during A, and obstructed in the mid-brachial region during B, C, and D. During C the cuff was inflated to about 300 mm. Hg. The figures are the respective measured flows in ml. per min.

the blood-pressure decreased, on both sides. The blood-flow was less and the blood-pressure lower in the normal limb.

ANALYSIS OF RESULTS

The drop in pressure across an ideal resistance is, with appropriate units, equal to the product of the resistance and flow through it. Thus, the difference between the local and central blood-pressures in our experiment is equal to the value of the collateral resistance multiplied by the total blood-flow in the limb distal to the obstruction. We have measured the pressures, and if the flow is known the resistance can be immediately calculated. In fact we have not measured the total flow through the resistance but only a part of it, since there was about 10 cm. of arm between the obstruction to the brachial artery and the collecting cuff. However, from the data it is still possible to calculate the resistance if certain assumptions are made. The design of the experiment allows a check on the validity of these assumptions.

Consider the situation when, while the artery is occluded, the cuff is inflated to a high pressure. Although no blood-flow is recorded the local blood-pressure is still less than the central, because some tissue above the cuff is supplied through the collaterals. If the vascular resistance of these tissues is Rs, then

$$Rs = \frac{p}{P-p}\,Rc$$

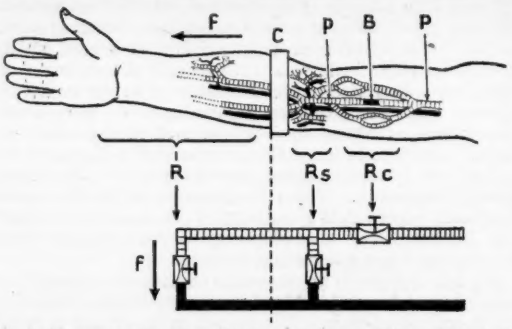

Fig. 3—Diagrammatic representation of the conditions during the experiment: P, central pressure; p, local pressure; Rc, collateral resistance; Rs, shunt resistance; R, peripheral resistance; f, measured flow; B, block in main artery; C, cuff.

where P = the central pressure, p the local pressure under these conditions, and Rc the collateral resistance (see fig. 3). If at other times a flow (f) is occurring through the part of the limb distal to the cuff, then, if Rc and Rs do not change and the local pressure is p′,

$$Rc\left(f + \frac{p'}{Rs}\right) = P - p'$$

Substituting for Rs as above, and solving for Rc, gives

$$Rc = \frac{P}{p} \cdot \frac{p-p'}{f}.$$

In our experiment, besides measuring P and p, we have for each side two sets of values of p′ and f, since the flow is increased after the period of total ischæmia. Hence two estimations of Rc can be made on each side. In fig. 4 all values for flows and pressures are plotted together with the values for either limb with the main artery unobstructed. The graph may be interpreted as follows: line A corresponds to the flow-pressure relation in the periphery of either limb under normal conditions—i.e., it represents peripheral resistance—line B represents the resistance lowered during reactive hyperæmia after thirty seconds' complete ischæmia; and lines C and D represent the pressure drop resulting in either arm by flow through the collaterals when the main artery is occluded. Our assumptions are: (1) that the peripheral vessels were in a similar state in both arms and reacted in the same way to thirty seconds' ischæmia; (2) that the pressure-flow relationship was substantially linear over the experimental range; and (3) that neither Rc

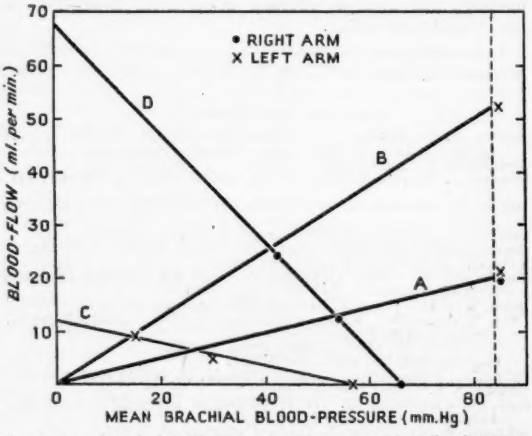

Fig. 4—Pressure-flow relationship in both arms: ●, right (affected) arm; X, left (normal) arm. Points on interrupted line are with artery unobstructed; other points are with artery obstructed. See text.

nor Rs changed during the experiment. If these assumptions are justified, the experimental points will lie on the intersections of the lines. It will be seen that this requirement is approximately fulfilled.

Calculation gives a value of Rc on the left some five times that on the right. The difference in pressures when the cuff is inflated so as to obstruct all flow is less striking than might be expected, because the flow through the part of the arm between obstruction and cuff is greater on the diseased side. Indeed Rs on the right is about a third of that on the left.

The method may be applied to cases of occlusive disease of the main artery, if the artery can be entered with a needle distal to the block.

SUMMARY

Blood-flow and blood-pressure were measured in the forearm and hand, with the main artery open and occluded, in a resting state and during reactive hyperæmia.

The data allowed the calculation of the resistance of the collateral vessels with the artery occluded.

An example is given of a patient with osteitis deformans of one humerus in whom collateral resistance was found to be five times greater on the normal than on the affected side.

The method can be used for the study of limbs with occlusive arterial disease, provided local arterial pressure can be measured.

We are indebted to R. W. Halls for technical assistance and Miss C. J. Dewe for the drawings.

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TREATMENT OF EARLY SYPHILIS

WITH PENICILLIN, NEOARSPHENAMINE, AND BISMUTH, AND WITH PENICILLIN AND BISMUTH ALONE

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Two years ago, McElligott et al. (1948) reviewed 275 cases of early syphilis treated with penicillin and a course of neoarsphenamine and bismuth lasting from six to ten weeks. The total dose of penicillin ranged from 2·4 to 4 million units in $7^1/_2$–$12^1/_2$ days. Two-thirds of the male patients and half the females were treated as outpatients with penicillin in oil-beeswax mixtures, the remainder being admitted to hospital and given 40,000–75,000 units of amorphous penicillin three-hourly or four-hourly. Contrary to expectation, more failures were noted in the smaller number of patients receiving aqueous penicillin at short intervals than among those given daily injections of oil-beeswax mixtures. At the time of review 54% of the total had been followed from twelve to eighteen months, 70·2% nine months or more, and 78·1% six months or more. Eleven patients in this series were treated again, four of these showing recent genital lesions, and all of them positive serum reactions. The possibility of reinfection rather than relapse could not be dismissed in any of the four clinical failures.

To these cases we now add 286 cases treated on similar lines, and report on the follow-up of the whole 561 patients and on the results of treating 183 primary and secondary cases with penicillin and bismuth alone.

The comparatively high incidence of toxic effects in the previous series, and the improved quality of the available penicillins, with their very high crystalline II (G) content, encouraged us to abandon arsenicals in the treatment of early syphilis in the autumn of 1947, and up to now we have had no cause to regret our decision.

Bismuth is relatively harmless and, though there is no certain evidence that a true synergism exists between it and penicillin in the treatment of early syphilis in man, the poor results of intensive and semi-intensive arsenotherapy without added bismuth suggest that a more slowly acting drug may be necessary to aid the immune processes in "mopping up" any straggling spirochætes. We still feel that the prolongation of the total treatment time may possibly have lowered the incidence of infectious relapse, and that, in some cases, it has perhaps prevented reinfection among married couples or other regular consorts. Be that as it may, the inevitable high absentee-rate during the period of surveillance is probably lowered if the treatment time is not so curtailed as to bring it into contempt.

Since the publication of our first paper few further attempts have been made to assess the results of combined antibiotic and metal syphilotherapy.

Eames and Miller (1949) reported the results of treating 1022 Army patients with 4,000,000 units of penicillin combined with a ten-week course of neoarsphenamine and bismuth. Owing to demobilisation there were many defaulters from subsequent surveillance, but an actuarial assessment disclosed a failure-rate of 15% at eighteen months.

Marin et al. (1949) combined 2,400,000 units of penicillin with arsphenoxide four times weekly for five weeks and bismuth twice weekly over the same period, and of 230 patients treated 185 were followed from six to thirty months. The results in 36 seronegative cases were adjudged 100% satisfactory, in 55 seropositive primaries 90% satisfactory, and in 94 secondary cases 86% satisfactory.

Pardo-Castello and Pardo (1950) treated 47 patients with early syphilis with twenty daily injections of 500,000 units of penicillin in aqueous solution with from ten to twenty biweekly injections of subsalicylate of bismuth. Of 41 patients observed from three to fifteen months 26 attained or maintained seronegativity, the remaining 15 showing no signs of relapse with a declining serological titre.

O'Malley (1950) reports 365 cases of early syphilis treated with various doses of penicillin plus three or four injections of arsphenoxide and bismuth. Of 86 followed for a year 4 were seroresistant and 8 showed serological relapse, 1 of which had mucocutaneous lesions in addition. The failure-rate was assessed at 13·95%.

In both of our series we have tried to classify the known failures as relapses or reinfectious after critical examination of each case. In coming to a decision we have been guided by the following principles:

(1) A slowly declining serological titre, even up to twelve months or longer, is no evidence of failure of treatment.

(2) A continued rising serological titre after treatment is always evidence of failure, and static positive findings, in both complement-fixation and precipitation tests, are most likely to be so if they persist for six months or longer.

(3) A solitary genital mucocutaneous lesion on a new site with negative or declining serum reactions is probable evidence of reinfection, more especially if it follows exposure with a known infectious consort. A mucocutaneous relapse is almost invariably preceded by a rising titre in the serum test.

PENICILLIN, NEOARSPHENAMINE, AND BISMUTH

Patients

	Men	*Women*	*Total*
No. treated	336	225	561
Stage of disease:			
Primary	269	75	344
Secondary	67	150	217
Dark field:			
Positive	298	163	461
Negative	38	62	100
Serum tests:			
Positive	215	201	416
Negative	121	24	145

Treatment

The total dosage of penicillin varied between 2·4 and 5 million units in eight days, the great majority receiving 500,000–600,000 units in an oil-wax medium daily for eight days. This was followed by an average of 4·0–4·5 g. of neoarsphenamine (0·45 g. every four days) and an average of about 2·0 g. of bismuth (0·2 g. of the oxychloride simultaneously with the arsenic).

Toxic Effects

No toxic effects of bismuth were noted; those of the penicillin were trivial, being limited to a few cases of urticaria, which were controlled with anti-histamine drugs. Those due to arsenic were comparatively numerous:

	Men	Women
Toxicodermal:		
Ninth-day erythema	19	18
Dermatitis	8	5
Pruritus	1	2
Herpes zoster	1	1
Gastro-intestinal:		
Hepatitis accompanying ninth-day erythema	1	0
Icterus	17	1
Urobilinogen in urine	2	2
Nausea and vomiting	2	9
Miscellaneous:		
Nitritoid crises	2	0
Granulocytopenia	2	1
Anæmia	0	1
Pyrexia	1	1
Headache	1	2
Pains in joints	2	1
Œdema	0	1
Numbness of extremities	0	1
Total	59	46

Total toxic effects 105

The incidence of jaundice in men was high and, although syringes and needles were boiled for fifteen minutes before use, this was attributed to the virus of homologous serum jaundice. It is of interest, however, that 6 of these patients had previously had severe ninth-day reactions.

Surveillance

As was to be expected in a large metropolitan clinic with many of the patients foreigners and others casually employed, the default-rate during post-treatment observation was high, and 34 seropositive patients defaulted shortly after completion of treatment, and 5 others disappeared within six months and before becoming seronegative. However, apart from these and the failures which are noted, all but 26 became seronegative within six months, and all of these achieved seronegativity within a year, 14 of them within nine months. The surveillance periods were as follows:

Men	Women	Total	Follow-up (months)
32	26	58	36 or more
74	50	124	30 ,, ,,
127	88	215	24 ,, ,,
142	112	254	18 ,, ,,
179	128	307	12 ,, ,,
207	141	348	9 ,, ,,
232	162	394	6 ,, ,,
265	186	451	3 ,, ,,
63	47	110	Less than 3

Failures

Of the 22 failures noted to date 10 have been classified as reinfections, 4 of the others relapsing with mucocutaneous lesions and the remaining 6 serologically. There are also in addition 2 doubtful neuro-failures. Diagnostic lumbar punctures have so far been done on 146 patients, with completely normal results except in the following 2 cases:

The cerebrospinal fluid (C.S.F.) of a woman examined thirty-two months after treatment showed 6 lymphocytes per c.mm. and a doubtful increase of globulin, all other findings, including the Wassermann reaction, being negative. This patient unfortunately defaulted immediately afterwards.

A second woman, examined at twenty-nine months, showed a paretic Lange curve, with all other findings negative. In this case no treatment was given until the C.S.F. had been twice rechecked at thirty-one and forty months with similar results. The patient was then treated again with 4,800,000 units of penicillin in oil-beeswax in eight days, and on lumbar puncture at forty-six months the C.S.F. was normal.

The significance, if any, of these two questionable recurrences of neurosyphilis is doubtful, especially in view of their negative serology, but they are both included among the failures. Our known failures therefore may be classified as reinfections 10, relapses 10, and recurrences of neurosyphilis 2.

PENICILLIN AND BISMUTH ONLY

Patients

	Men	Women	Total
No. treated	123	60	183
Stage of disease:			
Primary	78	5	83
Secondary	45	55	100
Dark field:			
Positive	98	38	136
Negative	25	22	47
Serum tests:			
Positive	91	58	149
Negative	32	2	34
Penicillin (4·8 mega):			
Oil-beeswax	123	49	172
Aqueous	—	11	11
Bismuth:			
1·5–2·5 g.	109	42	151
Less than 1·5 g.	14	18	32

Treatment

All patients received 4,800,000 units of penicillin in eight days and, except 11 cases in which two-hourly injections of aqueous solutions were given, this was administered in eight daily injections of 600,000 units in an oil-wax mixture. In all cases this was followed by weekly or occasionally bi-weekly injections of 0·2 g. of bismuth oxychloride, 151 patients being given doses of 1·5–2·5 g., and 32 less than 1·5 g. Except for a few cases of urticaria, none of which, with the help of antihistaminics, was severe enough to interfere with treatment, no adverse side-effects were noted.

Surveillance

Men	Women	Total	Follow-up (months)
12	2	14	24 or more
33	11	44	18 ,, ,,
54	22	76	12 ,, ,,
60	35	95	9 ,, ,,
69	38	107	6 ,, ,,
86	42	128	3 ,, ,,
36	19	55	Less than 3

Up to February, 1950, 76 patients have been followed for a year or more, and over half of the total for nine months. The 55 patients who have been followed for less than three months include 17 secondary syphilitics who defaulted before any significant decline in serum titre could be recorded, but, apart from this, all but 11 patients have become seronegative within three months and 9 of these within nine months and 2 within a year. It is now our practice to postpone examination of the C.S.F. until the second year of post-treatment observation, provided that the serological response has been satisfactory, and of the specimens of C.S.F. so far examined all have been found normal.

Three women were given "insurance" treatment with eight daily injections of 600,000 units of procaine penicillin G because of a subsequent pregnancy. The offspring of 2 of these were clinically and serologically normal at six months after birth, and the third patient, becoming pre-

eclamptic shortly before term, was delivered by cæsarean section of a macerated fœtus not thought to be syphilitic.

Potential Failures

The 17 secondary syphilitics (14 men and 3 women) who defaulted before a decline in titre could be noted have already been mentioned and it is impossible to guess how many, if any, ultimate failures these will produce.

The remaining 7 potential failures are as follows:

(1) Three secondary syphilitics defaulting between four and nine months after treatment with declining serum titres.

(2) One late secondary case (*T. pallidum* not isolated) defaulting at eight months with a strongly positive serum titre.

(3) One patient, diagnosed on clinical and historical grounds as a seropositive cervical chancre (*T. pallidum* not isolated) whose serum titre had only partially declined up to the fourth month and had remained static for a further six months.

(4) Two secondary syphilitics whose Wassermann reactions became negative within four months but Kahn tests were weakly positive at eighteen months. Further treatment was withheld, for it is our experience that such cases ultimately become completely negative.

Known Failures

Two have returned nine and fifteen months after treatment with penile chancres (*T. pallidum* present) but with negative serum reactions. Both of these admitted re-exposure from three to six weeks previously and are classed as *reinfections*.

Three men whose serum tests had become negative returned nine and twelve months after treatment with dark-field positive genital lesions and positive serum reactions. Although re-exposure was admitted they are classed as *relapses*.

CONCLUSIONS

Patients.—744 cases of early syphilis treated at St. Mary's Hospital in 1946–48 are reviewed: men 459, women 285, primary stage 427, secondary stage 317, dark-field positive 597, dark-field negative 147, seronegative 179, seropositive 565.

Treatment.—All patients had an eight-day course of penicillin, 561 receiving neoarsphenamine and bismuth in addition, and 183 added bismuth only.

Toxic Effects.—The only significant side-effects were those attendant on intravenous arsenotherapy.

Cerebrospinal Fluid.—Diagnostic lumbar punctures on 160 patients disclosed two instances of abnormality.

Surveillance

229	patients	were	followed	for	24	months	or	more
298	,,	,,	,,	,,	18	,,	,,	,,
383	,,	,,	,,	,,	12	,,	,,	,,
443	,,	,,	,,	,,	9	,,	,,	,,
501	,,	,,	,,	,,	6	,,	,,	,,
579	,,	,,	,,	,,	3	,,	,,	,,
165	,,	,,	,,	,,	Less than 3			

Results.—The fact that 56 patients (7·5% of the total) defaulted while still seropositive, most of them immediately after treatment, and that only a little more than half the total have been observed for twelve months or more, deters us from attempting to calculate a percentage failure-rate. We are therefore content to enumerate the known failures as follows:

Known reinfections	12
Known relapses	13
Weakly positive precipitation tests persisting for over nine months	3
Possible neuro-failures	2
Total	30

These figures support our opinion that eight daily injections of 500,000–600,000 units of penicillin in oil-beeswax suspension, followed by a short course of neoarsphenamine and bismuth, or of bismuth alone, is likely to be equally good treatment for early syphilis, and the fact that the early and later failure-rates do not seem to be worsening with the lapse of time is partially due to a diminishing reservoir of infectious syphilis from which reinfections could be acquired and to a steady improvement in the treponemicidal power of available penicillin preparations.

Though the C.S.F. is almost invariably normal a year or more after apparently successful treatment, 2 of 160 specimens of C.S.F. tested showed some abnormality in seronegative patients. It thus seems advisable to continue the practice of diagnostic lumbar puncture until cure is presumed.

We are becoming increasingly convinced that, provided penicillin-resistant strains of treponemata do not appear—and there is no evidence that they are likely to do so—the end of the arsenical era is probably at hand, and that the best treatment of syphilis in the future will be effected without the aid of these powerful albeit toxic drugs.

Our thanks are due to our serologist Dr. R. H. Gorrill and to Dr. G. W. Csonka and the staff of the department for their help in this study.

ADDENDUM

Since the submission of this article 2 further serological relapses have occurred, one twenty-four months and the other thirty-nine months after treatment. The first patient, a man with secondary syphilis, had received eight daily injections of 600,000 units of penicillin in oil-beeswax followed by twelve of bismuth (0·2 g.) at four-day intervals. The cerebrospinal fluid was normal at the time of relapse. The second, a woman with secondary syphilis, had received eight daily injections of 500,000 units of penicillin in oil-beeswax followed by 4·3 g. of neoarsphenamine and 3·4 g. of bismuth given in twelve injections at four-day intervals. Serum tests remained continually negative for thirty-four months and the C.S.F. was normal at the time of relapse. In both cases serological reversal has rapidly followed retreatment.

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STREPTOMYCIN IN LATENT GENITAL TUBERCULOSIS IN WOMEN

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IN the past eight years the importance of genital tuberculosis in the pathogenesis of sterility in women has been firmly established.[1–7] The so-called "latent" form is much the commonest; and, in contrast to the exudative form, the prognosis is almost always good. On the other hand, the latent form almost always gives rise to sterility which is unresponsive to treatment.

The sterility in these women seems to be caused, not by the tuberculous infection of the endometrium but by partial or total occlusion of the fallopian tubes; or it may be due to the extensive changes from the early tuberculous process in the endosalpinx and the perisalpinx. Most investigators take the view that the infection is not primarily of the reproductive organs, but that these

are involved in a descending process from the mesenteric glands and other neighbouring organs. This process attacks first the tubes and, much later, the endometrium; and it causes no symptoms. Thus, when endometrial tuberculosis is discovered accidentally the anatomical changes in the tubes may be so far advanced that conception is out of the question; and in these circumstances the prospect of curing the sterility is very poor even if the tuberculous process can be arrested. Nevertheless, bearing in mind the possible extension of infection to adjoining organs, one is justified in making every effort to treat the condition conservatively, however poor the prognosis for conception.

MATERIAL AND METHOD

In evaluating any treatment of endometrial tuberculosis, it has to be remembered that this disease is almost always associated with endosalpingitis and/or perisalpingitis. This report, however, is concerned with the treatment of endometrial tuberculosis only, and not of genital tuberculosis in general, because our methods of confirming therapeutic success or failure are limited to endometrial biopsy and to cultures from menstrual discharge.

Genital tuberculosis, and particularly endometrial tuberculosis, may clear up spontaneously; so this account deals only with cases recently diagnosed and treated. After treatment the result of a single endometrial biopsy is unreliable; for in serial biopsies one may be positive and the next, without further treatment, negative. These negative results can only be regarded as accidental; and for this reason we have based the evaluation results not on endometrial biopsies alone but also on cultures of menstrual discharge, of which we have made as many as possible both before and after treatment.

Five sterile women in whom endometrial tuberculosis was diagnosed by biopsy, and one woman whose menstrual discharge showed *Mycobacterium tuberculosis* on culture, were treated with streptomycin. We made every effort to treat these cases of latent genital tuberculosis with the minimal effective doses, in order to prevent side-effects. Three patients received 1 g. daily in two doses of 0·5 g.; the other three received 1 g. daily for eight days only, followed by 0·5 g. daily in two doses during the rest of the course. The total amount of streptomycin received by each of five out of the six cases was 40–45 g.

CASE-REPORTS

Case 1.—Aged 20. Married 5 years; no pregnancy. Bimanual examination of uterus and adnexa was negative. Insufflation on Oct. 7, 1947, showed the tubes to be patent. Endometrial biopsy on March 27, 1948, showed normal endometrium. First curettage, on June 26, revealed endometrial tuberculosis, as did a second on Oct. 13. Endometrial biopsy on March 16, 1949, also gave positive proof of tuberculosis; and cultures of menstrual discharges of two menses produced growth of *Myco. tuberculosis*.

The patient received 1 g. of streptomycin daily for 75 days. Endometrial biopsy on Oct. 2 showed no endometrial tuberculosis; and three cultures of menstrual discharge after treatment were negative.

Case 2.—Aged 32. Married 10 years; sterile. No history of tuberculosis. Bimanual examination revealed a tumour of the left adnexa, the size of an average apple. Suspicion of tuberculosis was confirmed by endometrial biopsy; and two of six cultures from menstrual discharges were positive.

The patient received 45 g. of streptomycin spread over 45 days. Thereafter endometrial biopsy showed a normal endometrium; and four cultures were negative.

Case 3.—Aged 30 years. Married 4 years; no pregnancy. At the age of 20 the patient had had pleurisy with effusion. Pelvic examination showed no pathological change in uterus or adnexa. Biopsy in July, 1948, showed tuberculosis of the endometrium; and of eight cultures of menstrual discharges, five showed numerous colonies of *Myco. tuberculosis*. The patient received altogether 45 g. of streptomycin of which 8 g. was given during the first 8 days and the remainder in doses of 0·5 g. daily. Biopsy performed after treatment was completed indicated that the endometrium was normal; and five cultures were all negative.

Case 4.—Aged 40 years. Married 10 years; no pregnancy. No history of tuberculosis. Genitalia normal. In 1942 salpingography showed occlusion of the right tube; endometrial biopsy at this time revealed severe tuberculosis of the endometrium.

This patient received 45 g. of streptomycin, 20 g. during the first 20 days, and the remainder in 50 days. After the treatment a biopsy showed normal endometrium.

Case 5.—Aged 35 years. Married 10 years; sterile. Biopsy in 1946 showed tuberculosis of the endometrium. Pelvic examination revealed nothing abnormal except for sinistroposition of the uterus. Seven cultures of the menstrual discharges between January and July, 1949, gave two positive results.

This patient received 42 g. of streptomycin between Sept. 15 and Nov. 6, 1949. Biopsy on Dec. 20 revealed normal endometrium. Six cultures since the end of the treatment have all been negative for tuberculosis.

Case 6.—Aged 39 years. Married 8 years; sterile. Sinistroposition of the uterus, which was otherwise normal. Three insufflations showed that the tubes were patent, and this was confirmed by salpingography. Biopsy revealed normal endometrium; but three cultures of the menstrual discharges were positive for *Myco. tuberculosis*.

This patient received 40 g. of streptomycin in 40 days, and biopsy immediately after the treatment revealed endometrial tuberculosis.

SUMMARY AND CONCLUSIONS

Of six confirmed cases of latent genital tuberculosis treated with streptomycin, five responded.

The total dosage was 40–45 g. in five cases, and 75 g. in one case. The daily dosage was 1 g., but in two cases it was only 0·5 g. for part of the course.

These results encourage us to believe that streptomycin, even in the fairly low total dosage of 40–45 g., is effective in cases of latent genital tuberculosis. The failure in one case (case 6) may have been due to insufficient dosage. One advantage of this treatment is that the endometrium is preserved; and so the remote chance of subsequent pregnancy is not finally removed.

The histological studies were made at the central pathological institute of the Kupath Holim; and the bacteriological studies at the central laboratories of the Kupath Holim in Tel Aviv and Haifa. Special thanks are due to the directors of these institutes: Dr. J. Casper, Dr. E. Bregman, and Dr. L. Hirsch.

ADDENDUM

Since this report was completed we have successfully treated with streptomycin six further cases of latent genital tuberculosis in women, bringing the total number of cases treated to twelve.

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". . . There is, incidentally, an extraordinary disinclination to regard tuberculosis as an infectious disease, as it is, amenable to the same principles of control and prevention as other infections. This attitude, despite the clear evidence of the last fifty years and the experience of other countries, is likely to prove disastrous for Scotland where tuberculosis is getting beyond control. The position is far too serious to permit of tentative measures by those who have little experience of the problem."—Dr. J. R. W. HAY, medical officer of health for Kirkcaldy, in his report for 1949.

BACTERIOLOGICAL CONTROL OF AUREOMYCIN THERAPY

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IT is now recognised that 'Aureomycin' rapidly becomes inactive in nutrient media at a temperature of 37°C and at pH levels above 6·0; also that the bacteriostatic titre is considerably higher than the bactericidal titre and is markedly affected by the size of the original inoculum and the stage of growth of the culture used (Paine et al. 1948). With these considerations in mind we have developed a disc-assay method for detecting aureomycin in burn exudates and a ditch-plate technique for testing the sensitivity of *Staphylococcus aureus*[1] to aureomycin. These methods are briefly described here because they may be useful in controlling aureomycin treatment of staphylococcal and other infections. Further experimental details will be reported elsewhere.

DISC-ASSAY METHOD FOR DETECTING AUREOMYCIN

Minimal quantities of aureomycin were detected by using Evans peptone-agar at the lowest pH (5·6) and the lowest incubation temperature (25°C) which together allowed adequate growth of the indicator organism. Fig. 1 demonstrates the value of this low temperature and pH. In laboratories without a 25°C incubator moderately satisfactory results can be obtained by using a heavy inoculum of a quickly growing indicator organism (*Bacillus cereus*),[2] incubating at 37°C, and reading the results in four hours. To obtain the widest zones of inhibition, however, the lower temperature is important.

With these modifications, the standard procedure of disc assay (Heatley 1949) was adopted. The organism should be sensitive, as judged by the tube-dilution method described below, to 0·04 μg. of aureomycin per ml. Many strains of *Staph. aureus* and the only strain of *B. cereus* that we tested are of this order of sensitivity. Each organism has minor practical advantages over the other, and both are at present being used in this laboratory. The stage of growth of the organism does not seem to be important, but smaller inocula have been shown to produce larger zones of inhibition around aureomycin discs. A 1 in 1000 dilution of a 24-hour culture is the highest dilution that, after 24 hours' incubation on media of pH 5·6 at 25°C, gives clearly definable zones. In these tests we used a phthalate acid buffer at pH 3 as solvent and diluent for aureomycin (Randall et al. 1949).

1. The name *Staph. aureus* is used to designate any coagulase-positive gram-positive coccus.
2. The strain of *B. cereus* (no. 5) was supplied by the Lederle Laboratories Division of the American Cyanamid Company, New York.

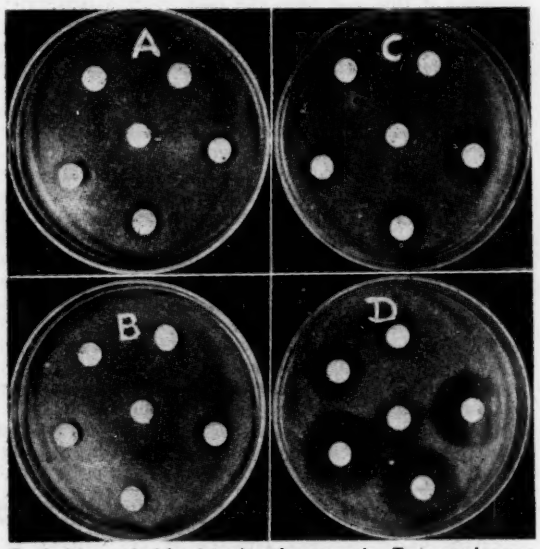

Fig. 1—Disc method for detection of aureomycin. Test organism was *Staph. aureus*. In each plate the three upper discs contained aureomycin solution 1 μg. per ml., and the three lower 5 μg. per ml. Plates A, pH 7·6, and B, pH 5·6, were incubated for 4 or 5 hr. at 37°C; and plates C, pH 7·6, and D, pH 5·6, for 24-28 hr. at about 25°C.

Detection of Aureomycin in Burn Exudates

Discs 9 mm. in diameter were cut with a cork-borer from thick fluffless blotting-paper, dry sterilised in a hot-air oven, and stored in small petri dishes. Each disc soaked up about 0·02 ml. of fluid. In the assay of dilutions of aureomycin this quantity was delivered from a "50-dropper" pipette immediately before assay. To collect samples of exudate the discs were placed with sterile forceps on the burnt area, where, within 10 seconds, they soaked up exudate or blood from the raw surfaces. They were also used for sampling exudate left on dressings or neighbouring skin, and at necropsy for taking multiple samples from tissues and fluids—e.g., bone-marrow, cerebro-spinal fluid, and intestinal contents.

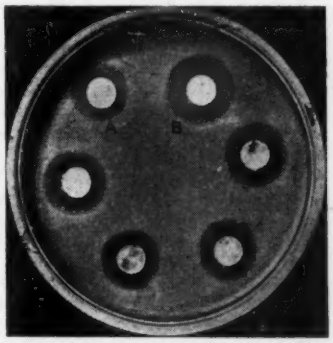

Fig. 2—Detection of aureomycin in burn exudate. An undiluted 24-hr. broth culture of *B. cereus* was the test organism on a plate at pH 5·6 incubated for 18 hr. at 25 C. Discs A and B contained 0·02 ml. of aureomycin solution, 1 μg. and 5 μg. per ml. respectively; the other discs had received exudate from four different burned areas on a patient treated with aureomycin, 250 mg. six-hourly by mouth.

These discs have been assayed on plates together with discs containing known amounts of aureomycin. So far, on the assumption that each disc absorbs about 0·02 ml. of exudate, zones of inhibition equivalent to between 1 μg. and more than 10 μg. per ml. have been obtained on every occasion from the 6 patients whose burn exudates were sampled while they were receiving aureomycin (at least 250 mg. six-hourly; see fig. 2) and never from patients not receiving aureomycin.

It is too early to say whether aureomycin in exudates can be assayed with any precision. The experimental error of the assay method has yet to be defined, and we do not know whether the curve of zone-diameter and log-concentration for aureomycin in exudate is a straight line and whether it parallels that for aureomycin in phthalate buffer (Knudsen and Randall 1945).

The heat lability of aureomycin can be used to differentiate zones of inhibition produced by aureomycin from those produced by other constituents of the exudate. Zones produced by aureomycin on pH 5·6 plates seeded with *Staph. aureus* and incubated at 25°C become much smaller and are often eliminated if they are incubated for a further day at 37°C. This reduction in size does not occur if the bactericidal agent in the exudate is, for example, a compound applied locally, such as dibromopropamidine, or the product of bacteria, such as *Pseudomonas pyocyanea*, colonising a burn. For this reason it is recommended that assay plates, after incubation at

25°C for 24 hours, should be incubated for a further day at 37°C. If the zones of inhibition remain unaltered they are almost certainly produced, at least in part, by some agent other than aureomycin.

The method can be made more specific for aureomycin by choosing an indicator organism that is resistant to the commonly used chemotherapeutic agents. We therefore recommend the use of a penicillinase-producing *Staph. aureus* rather than the Oxford staphylococcus.

The disc-assay method is simple to use and has the advantage over dilution methods in being applicable to 0·02 ml. quantities of contaminated fluid. The method should be suitable not only for burn exudates but also for wound exudates, capillary blood, and other body-fluids. The disc technique for sampling body-fluids has been described by Koelzer and Giesen (1949), working on the assay of streptomycin, and the general conception of assaying exudates has been discussed by E. J. Pulaski (personal communication).

DITCH-PLATE TEST FOR AUREOMYCIN-SENSITIVITY

Various agar-ditch and filter-paper-strip techniques for testing sensitivity to aureomycin have been tried. With a given concentration of aureomycin (10 μg. per ml.), filter-paper strips gave much more variable and smaller zones of inhibition than an agar ditch. Incubation at 37°C was found to be better than at 25°C because, although the zone of inhibition was smaller, the result could be read with precision after 18 hours' incubation, a point of considerable practical importance. It was unnecessary to adjust the whole plate to an acid reaction provided the aureomycin agar ditch was prepared with Evans peptone-agar at pH 5·6. The ditches were therefore made in 10% horse-blood Hedley Wright agar-layered plates at pH 7·6. It was found convenient to test penicillin sensitivity on the same plate as that used for aureomycin sensitivity.

Segments of blood-agar are removed on opposite sides of the plate with a sterile scalpel; then one ditch is filled with pH 5·6 Evans peptone-agar containing 10 units of penicillin per ml. while the other is filled with the same agar containing 10 μg. of aureomycin per ml. The plate should be used on the day it is prepared, for otherwise the zones of inhibition may spread too far across the plate. A loopful of a 24-hour broth culture of the *Staph. aureus* to be tested is placed equidistant from the two ditches and spread first across one ditch and then across the other, one side of the loop being used for one ditch only. In our present inquiry each plate received parallel inocula of 5 strains of *Staph. aureus* and a control (the Oxford staphylococcus, which was sensitive to 0·02–0·04 μg. of aureomycin per ml. by the tube-dilution method). In reading the results the important measurement is the relative lengths of the zones produced by the Oxford staphylococcus and by the test strain. As described below, organisms producing zones more than 1 mm. shorter than that of the Oxford staphylococcus should be further tested by a tube-dilution method.

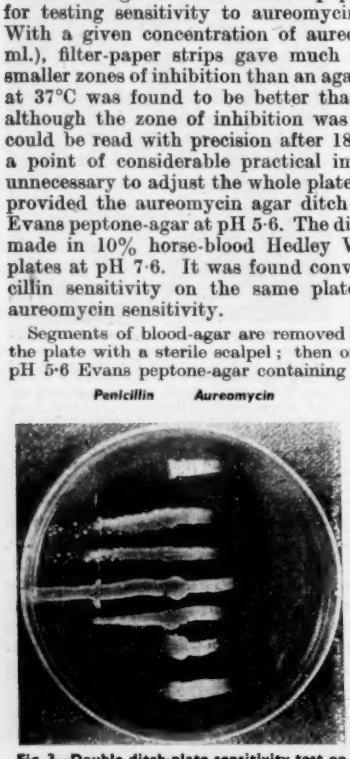

Fig. 3—Double ditch-plate sensitivity test on 6 strains of *Staph. aureus*, with control above.

In fig. 3, from above downwards, strains 1, 6, and 7 are sensitive and 2–5 resistant to penicillin. Strains 1–3 and 5–7 are sensitive to aureomycin; strain 4 gives a zone more than 1 mm. shorter than the Oxford staphylococcus (strain 1,) and should be re-tested by the tube-dilution method.

Reliability.—The ditch-plate method has been used in parallel with a tube-dilution method in which 0·5 ml. quantities of doubling dilutions of aureomycin in pH 5·6 Evans peptone-water were inoculated with 0·02 ml. quantities of a 1 in 1000 dilution of the same 24-hour broth-culture as was used for the plate test. The tubes were incubated at 25°C for 24 hour; the end-point was taken as the highest dilution with no turbidity.

The accompanying table compares the results obtained with 152 strains of *Staph. aureus* tested by the two methods in parallel. These were the 28 available bacteriophage types [3] and 124 strains recently isolated from burns under treatment in this Unit. When a strain has been tested more than once, the first result only is included. Of the 152 strains tested, 140 (92%) produced zones on the ditch-plate not more than 1 mm. shorter than the Oxford staphylococcus and were sensitive to 0·04 μg. per ml. in the tube. All the 28 bacteriophage types fell into this category. Among the burns strains there were 7 [4] which were resistant to 0·04 μg. per ml. in the tube, and all of them had produced zones of inhibition on the ditch-plate at least 2 mm. shorter than the Oxford staphylococcus, so their resistance would have been detected if this had been the only routine sensitivity test applied. But there were 5 other strains of *Staph. aureus* which were sensitive to 0·04 μg. of aureomycin per ml. but which also produced zones 2 mm. shorter than the Oxford staphylococcus. This discrepancy indicates the desirability of testing such strains by the tube-dilution method as well as the ditch-plate.

COMPARISON OF BLOOD-AGAR DITCH-PLATE AND TUBE-DILUTION METHODS FOR TESTING SENSITIVITY OF *Staph. aureus* TO AUREOMYCIN

Difference in length of zones on ditch-plate* (mm.)	No. of strains sensitive to various tube dilutions of aureomycin (μg./ml.)					Total strains
	0·01	0·02	0·04	0·08	>0·08	
+3	..	..	2	..	..	2
+2	1	3	6	..	..	10
+1	3	12	5	..	..	20
None	8	70	12	..	..	90
−1	2	11	5	..	..	18
−2	1	3	..	1	1	6
−3	..	..	1	..	2	3
−4	..	..	..	1	2	3
Total strains	15	99	31	2	5	152

The dotted lines divide the 12 more resistant strains from the remaining 140.

* i.e., length of zone of inhibition produced by test strain on blood-agar ditch-plate minus length of zone produced by Oxford staphylococcus.

To determine the consistency of the results on individual strains all staphylococci found to be relatively resistant by the ditch-plate or tube test have been retested one or more times by both techniques. By the tube-dilution method in every instance the strains previously sensitive to 0·04 μg. per ml. were again sensitive to this strength and the strains previously resistant to 0·04 μg. per ml. were again resistant to it; but, so far, all strains tested have been sensitive to 0·16 μg. per ml. By the blood-agar ditch method all strains resistant to 0·04 μg. per ml. in the tube have, on being retested, again produced zones of clearing 2 or more mm. shorter than the Oxford staphylococcus.

It seems from these results that a satisfactory routine would be to test all staphylococci in the first instance by the ditch-plate method, and to reserve the more time-

3. These were bacteriophage-propagating strains kindly supplied by the Staphylococcal Reference Laboratory, Colindale. Their bacteriophage types were: 3A, 3B, 3C, 6/53a, 7, 29, 29A, 31/44, 42B/47C, 42C, 42D, 42E, 44A, 47, 47A, 47B, 51, 52, 52A, 31A, 53, 54, 55, 57, 69, 70, 71, and 47D.

4. Of these 7 relatively resistant strains 4 were of bacteriophage types 47, 47/53, 47/53, and 53, and 3 could not be typed with the available unconcentrated phages.

consuming tube-dilution technique for organisms producing zones of inhibition more than 1 mm. shorter than the Oxford staphylococcus.

It is not known how infection with these slightly more resistant strains (sensitive to aureomycin 0·16 μg. per ml.) would respond to aureomycin therapy, but the difference in their sensitivity from that of most strains may well be of no clinical significance. The observation that a blood-agar ditch-plate technique can detect so small a difference in sensitivity indicates its presumptive value for the detection of organisms whose resistance is clinically significant. The method is being used in this Unit to detect minor variations in the sensitivity of *Staph. aureus* isolated from patients before, during, and after aureomycin therapy.

SUMMARY

The detection of aureomycin in burn exudates by a blotting-paper-disc-plate assay method is described. The sensitivity of this test was enhanced by using agar plates at pH 5·6 and incubating the test plates at 25°C. The method has the advantage of being applicable to 0·02 ml. quantities of contaminated fluids.

For testing the sensitivity of *Staph. aureus* to aureomycin, inoculation across a blood-agar plate with a ditch containing 10 μg. of aureomycin per ml. of agar at pH 5·6 is recommended. This method detects organisms resistant to 0·04 μg. of aureomycin per ml.

Thanks are due to Mrs. F. E. Brand and Mr. H. Lilly for technical assistance. Aureomycin hydrochloride capsules (Lederle) were kindly provided by the Antibiotics Clinical Trials Committee of the Medical Research Council.

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TEMPORAL ARTERITIS

TWO CASES TREATED WITH AUREOMYCIN

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SINCE first described by Horton, Magath, and Brown (1932), the syndrome of temporal arteritis has become a well-recognised entity. It occurs in elderly patients, over 55 years of age, and is characterised by an inflammatory reaction in the temporal arteries, with headache and signs of constitutional disturbance including fever, sweats, anorexia, and loss of weight. The temporal arteries are thickened and tortuous, and the overlying skin is often reddened. In some cases the disease spreads to the retinal vessels and causes disturbances of vision. The white-cell count may be normal or show a leucocytosis, and the erythrocyte-sedimentation rate (E.S.R.) is almost constantly raised.

The ætiology remains obscure, but in view of the inflammatory changes in the walls of the affected vessels, and the fever, infection seems to be the most likely cause. We have so far seen no reports of the response of temporal arteritis to any of the known chemotherapeutic or antibiotic agents. The two cases described here were treated with 'Aureomycin.'

CASE-RECORDS

Case 1.—A clergyman, aged 65, was admitted to the Radcliffe Infirmary on Aug. 17, 1950. Three weeks earlier he had begun to get severe headaches affecting the whole of the right side of the head and face. The pain was most severe in the right temporal and right occipital regions. The right side of the head and face felt abnormally sensitive. When the headaches started, he began to feel ill in himself; he went off his food and sweated at night. Ten days before admission he had had some carious teeth removed from his right upper jaw, but the pain had remained.

Past History.—? Paratyphoid fever, 1919. Cholecystectomy, 1923. In October, 1949, he attended the outpatient department because of epigastric pain. Barium-meal and barium-enema examinations gave normal results, but he was found to have a large calcified cyst in the liver. This finding, however, was thought to be unrelated to the pain. He was discharged from outpatients in March, 1950, and had no recurrence of epigastric pain afterwards.

On examination he looked ill, with a pale face and haggard expression, and complained of constant severe headache. Temperature 102°F, pulse-rate 90, respirations 20 per min. Both temporal arteries were thickened, the right more than the left. The skin was reddened over the frontal branch of the right temporal artery. The arteries were not very tender. No other abnormality was found.

Investigations.—Hæmoglobin 80%; white blood-cells 10,000 per c.mm.; E.S.R. 85 mm. in 1 hour. Blood-culture sterile. Blood-urea 27 mg. per 100 ml. Plasma-protein 6·3 g. per 100 ml. (albumin 3·1 g.). Agglutination of salmonella and brucella negative. Cerebrospinal fluid and urine normal. On radiography of the chest no lesion was seen. Biopsy of a section of the right temporal artery showed inflammation of the inner zone of the media and the intima. There were several small foci of necrosis with giant cells closely applied to them; surrounding these were proliferating fibroblasts, occasional lymphocytes, and moderate numbers of eosinophils. The adventitia showed proliferation of fibrous tissue, which seemed to vary in proportion to the severity of the medial changes.

Progress.—For the first week after admission the patient continued to have severe headaches and a temperature of 101° or 102°F every night. The biopsy done on his seventh day in hospital was followed by an immediate and dramatic improvement in the pain. His temperature after the biopsy also fell slightly, but he continued to feel ill and his appetite did not return. On the twelfth day after admission treatment with aureomycin 0·5 g. six-hourly was begun. He became afebrile in twenty-four hours, but his temperature rose to 99·8°F the next night. After this there was a steady improvement: his appetite returned, he began to feel well, and after he had been on aureomycin for two weeks he was getting up and was symptom-free. His temporal arteries appeared normal, and he was afebrile except for an occasional rise of temperature to 99°F. After the aureomycin was stopped, he remained well and was discharged home on Sept. 13.

Case 2.—A children's nurse, aged 66, unmarried, was admitted to an Oxford nursing-home on June 13, 1950. Two weeks previously she had begun to feel unwell and was found to have a temperature of 100°F. She stayed in bed, but there were no further symptoms. Eight days before admission she had been admitted to Moreton-in-Marsh Hospital, where she had irregular fever up to 102°F. There were then no abnormal physical signs except tenderness in the left lower quadrant of the abdomen. She continued to have fever and was transferred to Oxford.

On examination she had a pale complexion but did not look ill. Temperature 100·6°F, pulse-rate 84, respirations 20 per min. Blood-pressure 140/74 mm. Hg. No other abnormal physical findings.

Investigations.—Hb 66%; white cells 8000 per c.mm.; E.S.R. 125 mm. in 1 hour. Chest radiography normal.

Progress.—Three days after admission she began to complain of "painful spots" on the forehead, worse on the left than on the right. Examination showed a striking enlargement of the temporal arteries with a nodular irregularity of outline and slight reddening of the skin over the vessels. There was little tenderness. The diameter of the vessels appeared to be about $^1/_4$ in. The condition was more severe on the left side. Other superficial vessels and the optic fundi appeared normal. She remained febrile and looked progressively more ill.

On June 27, two weeks after admission, the temporal arteries were still enlarged and painful, and treatment with aureomycin 0·5 g. six-hourly was started. Within twenty-four hours her temperature fell and she looked better, but she began to complain of nausea. Six days after the start of treatment with aureomycin the temporal arteries looked

normal, but nausea and sometimes vomiting became so severe that it became doubtful whether she could continue with the treatment. She was therefore given 'Aludrox' 1 drachm before each dose of aureomycin. This controlled the nausea, but it is now known that aludrox seriously interferes with the efficacy of aureomycin treatment. Four days later, after a total of ten days, the aureomycin was stopped. Within forty-eight hours the headache recurred, with enlargement and tenderness of the temporal arteries, and the temperature, which had been about 99°F, rose to 100°F.

During the next two weeks there was a gradual improvement in her condition, and by July 17 the temporal arteries had once more become normal. On this day the patient complained for the first time of defective vision in the right eye, and was found to have a visual defect of about one third of the right half of the right visual field. The left visual field was normal, and no ophthalmoscopic changes were seen. For the next two weeks there was a further improvement in her general condition, and during this period, since her hæmoglobin had remained at 66% and she had been unable to tolerate ferrous sulphate tablets, she was transfused with two bottles of group-A blood. By Aug. 9 she was getting up, and expressed herself as feeling perfectly well. There was no fever, little headache, and the temporal arteries were normal. She was discharged on Aug. 17 symptom-free.

DISCUSSION

There can be no doubt about the diagnosis of temporal arteritis in either of the two cases described. In the first case confirmation was obtained by biopsy, and in the second case, although no biopsy was done, the, clinical manifestations were conclusive. In case 1 the patient improved steadily while he was on aureomycin, and the difference in his whole appearance before and after starting the drug was remarkable. After two weeks he was afebrile and symptom-free. In case 2 th drug was badly tolerated, and its effect was less conclusive. However, the fall of temperature and return to normal of the temporal arteries soon after starting treatment with aureomycin, and the relapse forty-eight hours after it had to be stopped, indicated a definite influence of the drug on the disease.

The disease untreated is self-limited and its duration variable. Horton and Magath (1937) found that in their cases the illness lasted four to six months, but Cooke et al. (1946), who reviewed all the previously published reports, considered that the average duration of the disease was much longer than this. The total duration of the disease in case 1 was only seven weeks, and in case 2 only eleven weeks (nine weeks from the onset of the changes in the temporal arteries). This short duration seems to be further evidence of the beneficial effect of aureomycin therapy.

Although it is not claimed that the result of treatment in two cases is in any way conclusive, it is felt that the response to aureomycin was sufficiently encouraging for this remedy to be tried by other workers.

SUMMARY

Two cases of temporal arteritis are described.

Both patients were treated with aureomycin. In one case there was a steady improvement in the patient's condition during treatment. After two weeks' treatment with 0·5 g. six-hourly he was symptom-free, and he has remained well since. In the other case the aureomycin was badly tolerated and had to be withdrawn before a complete course could be given. However, the patient showed considerable improvement while under treatment, and she relapsed within forty-eight hours of its withdrawal.

Aureomycin seems to deserve further trial in temporal arteritis.

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PENICILLIN IN WEIL'S DISEASE

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Weil's disease (*Leptospirosis icterohæmorrhagica*) carries a mortality of about 20% in patients in whom liver and kidneys are seriously affected. Milder cases, especially anicteric, recover spontaneously; but there is no means of foretelling early in the illness how severe the course will be. Hence active treatment, with penicillin, is always indicated.

Heilman and Herrell (1944) have demonstrated the curative action of penicillin in experimental leptospiral infection, and Alston and Broom (1944) its lethal effect on leptospira in vitro. Chang's (1946) experimental results have, in the main, confirmed these findings, and, on the basis of experiments with leptospirosis in guineapigs, he advocated for human leptospirosis a daily dosage of 250,000–300,000 units of sodium penicillin. Hart (1944), Carragher (1945), Bulmer (1945), and Patterson (1947) have commented favourably on the clinical use of parenteral penicillin in Weil's disease; they have noticed rapid disappearance of leptospira from the urine and an absence of febrile relapses, but no apparent effect on the jaundice and nephritis.

Experimental observation as well as clinical experience has provided ample evidence of the necessity of giving penicillin at the earliest stage of the infection. The ideal would be antibiotic treatment in the preicteric phase. Unfortunately the diagnosis is not then easy, especially as facilities for the rapid demonstration of leptospira are not always available. The fact that the infection may occur often in people whose occupations carry no professional hazards of leptospirosis adds to the difficulties of early diagnosis. Patterson (1947) wrote: "The average patient [with leptospirosis icterohæmorrhagica] presents a picture of moderately severe influenza with decided conjunctival and scleral engorgement. If the clinician remembers just this much he will usually make the correct diagnosis." The urine should be examined in every case of suspected Weil's disease; the finding of albuminuria strongly supports the diagnosis.

The six cases of Weil's disease described here were treated with penicillin. The course of penicillin was started before the seventh day of the illness—i.e., before agglutination tests had become positive. According to Bulmer (1945), the true value of penicillin in Weil's disease can be ascertained only by observing its effect during the preicteric phase. Such observations are scanty, and the timing and results of treatment in cases 1, 2, 4, and 5 are, in this respect, of some interest.

CASE-RECORDS

Case 1.—A business man, aged 27, became ill on Oct. 27, 1946, the onset being marked by rigor, generalised pains, pyrexia, and dry cough. Three days later he was admitted to hospital with a temperature of 103°F. He was then seriously ill; he was apathetic, with a dry coated tongue, and complained of influenza-like symptoms; albuminuria was present. Penicillin was given in an initial dose of 60,000 units and continued in doses of 30,000 units three-hourly for seven days. On Nov. 1 jaundice appeared and blood was found in the urine. These findings supported the diagnosis of Weil's disease, though the circumstances in which the infection could have occurred remained a mystery. The patient's serum did not show agglutination of *L. icterohæmorrhagiæ* (1/1000) till Nov. 6. His temperature became normal twelve hours after starting penicillin therapy. Jaundice and microscopical hæmaturia persisted for about three weeks. He was discharged fit on Dec. 10, 1946.

Case 2.—A salesman, aged 27, fell ill on Dec. 22, 1948, with fever, abdominal pain, constipation, hæmaturia, lumbago, and headache. He was admitted to hospital on Dec. 25 with a provisional diagnosis of acute nephritis. Two days later a slight icteric tinge of scleræ was observed, and

a tentative diagnosis of leptospirosis was made. The patient had worked in the cellar of his house about a week before feeling ill; he did not know whether the place was rat-infested. A course of penicillin 100,000 units three-hourly was begun on Dec. 27 and continued for ten days. The agglutination test became positive (1/300) on Dec. 29. Within twenty-four hours of the first injection the patient felt very much better, and his temperature became normal, but jaundice and hæmaturia lasted eight days. He was discharged on Jan. 12, 1949, completely cured.

Case 3 (under the care of Dr. E. Sanders).—A sewage-worker, aged 40, reported ill on April 1, 1949. That day he had a rigor followed by fever, headache, and myalgia in arms and legs. He came into hospital on April 7, being then very ill, with temperature 99·2°F, suffusion of eyes, asthenia, jaundice, and albuminuria.

The diagnosis of Weil's disease was evident, and a course of intramuscular penicillin 100,000 units three-hourly was started at once and continued for ten days. On admission the blood-urea level had been 125 mg. per 100 ml., but on the fifth day of treatment it fell to 44 mg. per 100 ml. On April 12 the serum showed agglutination of *L. icterohæmorrhagiæ* in dilution up to 1/3000, with a trace at 1/10,000. The patient made rapid progress, and his temperature was normal from the second day onward. Jaundice cleared after a few days, and the blood-urea level was normal on April 21. Liver-function tests were normal on admission, but unfortunately they were not repeated during the later stages of the illness. He returned home on May 3, 1949.

Case 4.—An electrical engineer, aged 26, became suddenly ill on April 27, 1949, with severe frontal headache and generalised muscular pains. About ten days before the onset he had gone swimming in the river Thames near Teddington Lock (rather flooded at the time). On April 30 (the day of admission to hospital) he vomited once and his temperature rose to 101°F. When first seen he was irritable and fatigued, with a dry coated tongue, nausea, and injected conjunctivæ and scleræ. On May 2 albuminuria was found and a questionable icteric tinge of the scleræ. A course of penicillin 100,000 units four-hourly was given for eight days. The first agglutination test was positive (1/3000) on May 4. Ten days later the titre rose to 1/10,000, with a trace of agglutination at 1/100,000. Within twelve hours of the first injection the patient became afebrile, and he remained so throughout the rest of the illness. Clinical improvement was most striking in this case, symptoms having disappeared within twenty-four hours, except for headache which persisted for several days longer; jaundice and albuminuria disappeared by the end of the penicillin course. Red blood-cells were seen in the urine for the last time on May 12. He was discharged from hospital on May 21, 1949.

Case 5.—A man, aged 35, employed in a "live" sewer, called in his doctor because of the sudden onset of rigor, backache, headache, and myalgia in his arms. Next day he complained of anorexia, constipation, and epigastric pain. Albuminuria was found by the patient's doctor, who sent him into hospital three days later with a provisional diagnosis of Weil's disease. At examination on June 13, 1949, the most noticeable features were the sallow complexion, dry coated tongue, slight suffusion of eyes, pyrexia, and profound prostration. Intramuscular penicillin was started soon after admission and continued for fifteen days (100,000 units three-hourly for forty-eight hours and thereafter four-hourly). On the second day of treatment jaundice and frank hæmaturia appeared; symptoms of uræmia, especially lethargy, became pronounced. However, the clinical picture soon changed for the better, and on the eighth day of treatment icterus and nephritis were on the wane. On July 1 the patient was normal in all respects; his erythrocyte-sedimentation rate (E.S.R.) was normal. The agglutination test did not become positive till June 27, 1949, (1/300). He was sent home on July 18.

Case 6.—A plumber, aged 47, employed on repairs of outside drains, was admitted to hospital on Nov. 11, 1949, with four days' history of asthenia, pains in the legs, and headache, ushered in by a rigor, vomiting, abdominal pain, and headache. Thirty-six hours before admission jaundice had appeared, the urine had become a deep amber colour, and he had been pyrexial. He was very ill, with temperature 97·4°F, moderate icterus, and a dry tongue covered with brown fur; he was perspiring freely; and his liver was slightly enlarged and tender on palpation. His blood-pressure was 110/70 mm. Hg. He was drowsy and complained of fatigue, aching in the legs, and constipation. Since no urine had been passed in the past thirty-six hours, the bladder was catheterised; this produced a few ounces of bile-stained turbid urine in which urobilin could not be detected. Albuminuria was present.

A course of penicillin was started immediately, an initial dose of 500,000 units being followed by doses of 100,000 four-hourly. On Nov. 14 the dosage was increased to 500,000 units four-hourly till Nov. 29. Four hours after the first dose of penicillin the patient had a rigor, with deterioration in his general condition, and his temperature rose to 100·4°F one and a half hours after the rigor began. Next day no urine was passed, but the anuria was short-lived and twenty-four hours later urinary secretion started; on Nov. 15 the output measured 110 oz. The improvement in the renal condition could also be seen in the return to normal values of the blood-urea, which had been 220 mg. per 100 ml. on admission and was only 38 mg. on Nov. 24. Icterus, however, continued to deepen until the patient's skin and mucosæ were deep golden orange. It was obvious that treatment had not arrested the progress of hepatic lesions. Thus, the colloidal-gold reaction, negative on the day of admission, became positive (+ + + 3) on Nov. 21, and the thymol turbidity test increased from 2 units (normal 0–4) to 7 units. There was a febrile period (Nov. 18–24) with the temperature varying from 99·6° to 101°F and signs in the chest suggesting left basal pneumonia. No special treatment was given. On Nov. 29 penicillin was discontinued.

The serological diagnosis remained uncertain until Nov. 21, when the patient's serum showed agglutination of *L. icterohæmorrhagiæ* in dilutions up to 1/1000; before that day the result was doubtful, with agglutination in a dilution of 1/30 on Nov. 16. On Dec. 5 renal and liver-function tests were repeated and found normal; the blood-urea level was 32 mg. per 100 ml.; and a blood-count was normal in all respects. The patient was discharged on Dec. 20.

DISCUSSION

The beneficial effect of penicillin given early in Weil's disease is shown by the rapid fall of the temperature and by disappearance of such symptoms as headache, myalgia, epigastric pain, and apathy; urine output, blood-urea level, white-cell count, and E.S.R. return to normal quicker than in untreated patients. No leptospira can be found in the urine twenty-four hours after the first dose of penicillin.

According to published reports febrile relapses do not occur in penicillin-treated cases, but the febrile period in case 6 suggests that this is not always so. Another interesting point in case 6 is the reaction seen a few hours after the administration of penicillin. Clinically it resembled the Jarisch-Herxheimer reaction occurring in primary and secondary syphilis treated with penicillin, but no description of such reactions in Weil's disease has been published.

Though penicillin does not seem to have any effect on the course of established hepatitis, it probably protects the liver as well as the kidneys from further assaults by leptospira which might be alive and multiplying were it not for penicillin's growth-inhibiting powers. It has been conclusively shown, both in laboratory animals and in man, that penicillin has no inhibitory action on the formation of leptospiral antibodies in the penicillin-treated infection, and thus does not interfere with the agglutination of *L. icterohæmorrhagiæ* by the patient's serum.

Another antibiotic effective in leptospirosis icterohæmorrhagica is 'Aureomycin,' which will probably take the place of penicillin as the drug of choice because of its efficacy when taken by mouth. Heilman (1948) has reported that aureomycin is about twice as effective as penicillin in protecting hamsters from a fatal leptospiral infection.

SUMMARY

An account is given of six cases of Weil's disease treated at an early stage with parenteral penicillin

There is ample experimental and clinical evidence of the curative value of penicillin if administered early in the disease. Our aim should be to make the diagnosis on clinical grounds and start antibiotic treatment in the preicteric phase, and to confirm the diagnosis by agglutination tests later.

I wish to thank Dr. Thomas Hunt for his kind interest and help in the preparation of this paper.

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PARATYPHOID URINARY CARRIER TREATED WITH CHLORAMPHENICOL

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THE treatment of carriers of typhoid or of paratyphoid bacteria in the fæces with chloramphenicol has so far produced little improvement, but the result achieved in the following case of a carrier of *S. paratyphi-B* in the urine is encouraging.

A *S. paratyphi-B* infection broke out in Sheffield in the autumn of 1946, and one of the patients, a boy aged 8 years, was transferred from the City General Hospital to Lodge Moor Hospital on Dec. 12, 1946, convalescing from paratyphoid fever. *S. paratyphi-B*, Vi phage type 2, which was the type responsible for the epidemic, was continuously present in his urine. The following treatments had no effect:

March, 1947: sulphaguanidine 6 g. daily for seven days (total 42 g.).
April, 1947: sulphadiazine 6 g. daily for seven days (total 42 g.).
May, 1947: sulphadimidine, 6 g. daily for seven days (total 42 g.).
June, 1947: intramuscular penicillin 20,000 units three-hourly for ten days (total 1·6 mega units).
July, 1947: 'Mandelix' 1 drachm thrice daily for fourteen days.

On Sept. 15, 1947, the patient was discharged home as a persistent urinary carrier of *S. paratyphi-B*, and the public-health department of the city was notified. During the next sixteen months nine urinary specimens were examined; all gave moderate or heavy growths of *S. paratyphi-B*, and some pus cells were also present. There were no red cells or casts.

In August, 1948, serum-agglutination with *S. paratyphi-B* antigens gave the following results: Vi, 1 : 5 +; O, 1 : 100 +; H (type aggn), 1 : 500 +, (group aggn), 1 : 200 +.

On Jan. 13, 1949, the patient was readmitted to Lodge Moor Hospital for streptomycin therapy. *S. paratyphi-B* was isolated from the urine and examined for sensitivity, with the following results: penicillin, resistant; sulphathiazole and sulphadiazine, slight inhibition; sulphadimidine, no inhibition; and streptomycin, moderate inhibition.

From Jan. 20 to Feb. 8, 1949, intramuscular streptomycin 0·5 g. was given six-hourly for 21 days (42 g.).

On Feb. 12, 1949, *S. paratyphi-B* was still present in the urine.

From March 3 to March 23, 1949, intramuscular streptomycin 0·5 g. was given six-hourly for 21 days (42 g.).

On March 24, 1949, *S. paratyphi-B* was still present in the urine and the organism now resisted more than 50 units of streptomycin, whereas originally it was inhibited by 4 units.

On April 2, 1949, the boy was discharged home again as a persistent urinary carrier. After his discharge from hospital specimens of urine taken at three-week intervals persistently showed *S. paratyphi-B* in large numbers.

On March 23, 1950, the patient was readmitted to hospital for chloramphenicol therapy. From April 1 to April 10 he was given chloramphenicol 1 g. thrice daily. His urine, examined on April 12, 17, 21, and 27, showed neither *S. paratyphi-B* nor *Bact. coli*.

On May 1 the boy was discharged home. Since then he has been under our observation, and fæcal specimens have been examined but *S. paratyphi-B* has never been found. Specimens of urine were examined on May 8, 17, 24, and 31, and June 15; none of these grew *S. paratyphi-B*, but *Bact. coli* was grown from the specimens of May 24 and 31, and a light growth of *Strep. fæcalis* was obtained from the specimen of May 17. The boy is now permitted to attend school after an absence of almost four years.

Further investigation will be required before we can safely claim to have established the powerful disinfectant qualities of chloramphenicol in urinary infection.

We are deeply indebted to Dr. L. G. Cook, director of pathology, City General Hospital, Sheffield, for the bacteriological examinations.

Medical Societies

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY

Vaginal Discharge

AT a meeting on Dec. 21 Dr. MARGARET HADLEY JACKSON spoke on vaginal discharge. Some degree of discharge, she said, is physiological, though the character of the normal vaginal content varies according to the age of the woman. Thus, microscopically, there are recognisable an infantile, a mature, and a postmenopausal (senile) type of discharge. In the mature type three distinct grades can be distinguished by their characteristic flora; and the grade tends to remain fairly constant in any particular individual.

In a case of vaginal discharge it is useful to attempt to classify it as: (*a*) physiological, (*b*) due to hormonal imbalance, or (*c*) pathological. Physiological discharges are mere exaggerations of the normal secretory desquamative processes; they occur commonly in young unmarried women and demand no treatment except reassurance and occasionally a warm water or bicarbonate douche. Cases due to hormonal imbalance may present with, for example, a profuse mucoid discharge with a grade-1 flora often associated with a follicular cyst; or, if due to ovarian deficiency, with a thin discharge, a grade-3 flora, and many squames of the basal type. In the pathological group special importance attaches to the age of the patient. Among the infantile, where the mucosa is thin, the commonest cause of discharge is vaginitis, either traumatic from foreign bodies or masturbation, or infective, due to the gonococcus or other organisms. In the mature, other traumatic causes have to be borne in mind—e.g., rings, menstrual tampons, buried sutures in a healing perineum, and fistulæ into bladder or rectum. In addition one has to consider the possibility of allergic reactions to contraceptives, of infestations with trichomonas, monilia, or yeasts (the last two particularly common in pregnancy and in diabetes mellitus), of venereal disease, and of cervical and uterine lesions. In the postmenopausal, where the mucosa has again become thin, apart from discharges due to polyps or malignant disease, one encounters atrophic vaginitis, often characterised by a profuse and offensive discharge which only very rarely contains trichomonas or monilia.

In investigating a case of vaginal discharge the history is of first importance: whether there is irritation,

soreness, dysuria, or bleeding, and whether there has been venereal contact. The source of the discharge must be located, the urine tested, and threadworms and piles excluded. The macroscopic appearance of the discharge is often characteristic. To examine the discharge microscopically a specimen should be collected from the fornices with a long-handled 'Bakelite' spoon, and a wet film should be made. Elaborate methods of illumination or staining are not usually essential unless venereal disease is suspected. The trichomonas is almost invariably associated with a grade-3 flora, and the monilia with a grade-1 or grade-2 flora.

Treatment must be appropriate to the cause, that of trichomonas and monilia being sometimes tedious. Life is too short to carry out repeated vaginal paintings, and the more that treatment can be made self-applicable the better. Dr. Jackson advocated ringing the changes on two or more methods of treatment in cases of trichomonas infestation—e.g., 'Picragol' powder, 'S.V.C.' tablets, or carbarsone suppositories, combined with douching with 'Milton' (as in veterinary practice) or with lactic acid, and, in cases where the mucosa is thin, œstrogens locally or orally. Where the husband is also infected with trichomonas the wife is constantly subject to reinfection, but the treatment of the male is extremely difficult. About 50% of a series of 468 women attending the Whitechapel clinic were found to be infested with trichomonas. Of those thus infected, 130 had no evidence of gonorrhœa and 102 had. In a series of infertile women attending the Exeter and District Women's Welfare Association clinic, the incidence of trichomonas was 15%; while in a birth-control series at the same clinic it was only 5%. This lends support to the view that chemical contraceptives have a deterrent effect on trichomonas.

For monilia Dr. Jackson recommended alkaline douches and a gentian-violet, glycerin, and borax suppository. For vaginitis in the very young œstrogens by mouth or locally are undoubtedly of value. Non-specific cervical discharges yield dramatically to treatment with the electric cautery, together with sulpha drugs by mouth or penicillin by injection.

Reviews of Books

Textbook of Physiology and Biochemistry

GEORGE H. BELL, B.SC., M.D., F.R.F.P.S.G., professor of physiology, University of St. Andrews, at University College, Dundee; J. NORMAN DAVIDSON, M.D., D.SC., F.R.F.P.S.G., Gardiner professor of physiological chemistry, University of Glasgow; HAROLD SCARBOROUGH, F.R.C.P.E. professor of medicine, Welsh National School of Medicine. Edinburgh: E. & S. Livingstone. 1950. Pp. 918. 45*s*.

NOWADAYS the major techniques in clinical research are physiological; and the medical student reading physiology should grasp certain principles as a preliminary to his clinical work. He should learn the way in which physiological knowledge is collected, and have some appreciation of the difficulties of biological measurement. From this he should understand the arduous labour required to build up knowledge, and the tenuous and evanescent character of many of our working hypotheses, and should learn to value the open mind. Selection from the vast subject is necessary in a textbook, and the facts chosen should be strictly accurate. Thus the student will realise that physiology not only serves medicine but often leads the way, and that it is one of the great scientific foundations on which practice should be built.

This new textbook has been compounded by an excellent team consisting of biochemist, general physiologist, and clinician, all of high academic standing. Those who turn to it merely for an account of modern applied physiology may at first feel disappointed. For example, the chemical data are a little too isolated from discussion of the living processes; in the section on protein needs mention might have been made of Borst's finding that tissue breakdown is greatly reduced by adequate provision of calories in fat and carbohydrate; and electrocardiography is too sketchily outlined to give a solid basis for modern practice in this subject. Again, Prinzmetal's recent work suggests that the importance of circus movement in auricular fibrillation and flutter has been overstressed. The section on pulmonary circulation is hardly adequate, and Starling's law of the heart is erroneously stated, in a table, to be concerned somehow with changes in heart-rate. The mechanism of swallowing is poorly described, little reference being made to reflexes from the palate and pharynx which can be abolished in man by local anæsthesia; while the motor pathway which may be involved in many diseases affecting the medulla is not given enough emphasis. Some of the illustrations—such as the clinical photographs of scurvy—are not good enough to help the inexperienced reader. But it is easy to pick such faults by looking for them, and all these are minor blemishes. As a whole the book is sound and well up to date. It gives good references particularly to human physiology, and the sections on the circulation, vitamins, and endocrinology are all satisfying. It may well become the standard physiological manual for British students. But if the student is really to appreciate the live character of physiology, a brief section on the limitation of many present-day methods and the necessity for statistical study would be a salutary addition.

Regional Dermatologic Diagnosis

ERVIN EPSTEIN, M.D., consultant in dermatology and syphilology to the Oakland Area Veterans' Hospital and Mt. Zion Hospital, Oakland, California. London: Henry Kimpton. 1950. Pp. 328. 42*s*.

EACH chapter deals with skin diseases that may affect a part of the body—e.g., the nose, lips, or hands—and at the end of each chapter the diseases are tabulated. On the title-page Dr. Epstein admits that his book is not intended for specialists; and, so far as it is possible to deal with the diagnostic problems of dermatology in this way, the idea has been well carried out. The value of such a work is a little doubtful, especially now that more and more so-called skin diseases are proving to be symptoms of more general disorder of bodily and mental health. The dermatologist of today must be a highly trained general physician with special knowledge in his own branch; and it would be wrong to encourage students to tackle dermatology from the regional standpoint. Nevertheless the harassed practitioner may find this book useful; for not only is the text lucid but the illustrations are excellent and there is much valuable information on treatment.

Surgery of the Shoulder

A. F. DEPALMA, M.D., professor of orthopædic surgery, Jefferson Medical College, Philadelphia. London: J. B. Lippincott. 1950. Pp. 438. £7.

ANY book dealing with disabilities of the shoulder inevitably provokes comparison with Codman's masterpiece. Though Professor DePalma's work is less strictly personal, since it includes opinions and techniques from many sources, it nevertheless emerges bravely from the comparison. Beautifully produced, it has first-class diagrams and X-ray reproductions.

The normal pathology of senescence as it affects the shoulder has been studied in a large number of subjects, and correlated with the symptoms—or lack of them—during life. Gross tears of the rotator cuff and other degenerative lesions commonly found are compatible with normal function, which raises the question whether operation is not performed too often for traumatic ruptures. There is an obvious difference, as Professor DePalma notes, between the slowly developing degenerative lesion and the sudden disruption which allows no time for compensating adjustments; but, he says, even "fresh traumatic lesions pointing to rupture of the cuff do not demand immediate exploration. Many individuals so affected regain complete usefulness of the arm . . . if the tear is not too severe." More important than the size of any tear in determining weakness in abduction is disproportion between the power of the deltoid and of the short rotators. Gross lesions of the cuff may not impair function in the aged, where the deltoid is already correspondingly weak. But cuff pathology is in advance of true senescence, and even a small tear in a middle-aged labourer

with a powerful deltoid may lead to incapacity because the humeral head can no longer be steadied against the glenoid before abduction begins.

The interrelated syndromes of frozen shoulder, bicipital tenosynovitis, and calcifying degeneration of the cuff are well covered, with a proper emphasis on the importance of lesions of the long biceps tendon derived from the recent work of Hitchcock and Bechtol. Of recurrent dislocation, Professor DePalma says that any operation which restricts external rotation will be curative, but he reminds us that spontaneous cure with age is the rule.

The chapter on fractures and fracture-dislocations of the upper end of the humerus is full of common sense. The patient is more important than the local lesion, perfect anatomical reduction is not essential to rapid functional recovery, and the attempt to achieve the first may prejudice the second. In much comminuted fracture-dislocations the author is prepared to excise all the head fragments and anchor the musculotendinous cuff to the upper humeral shaft.

There are sound chapters on tumours of the region, and on shoulder pain of neurogenic origin. The final chapter on operative techniques is particularly helpful on arthrodesis.

The book has the welcome virtue of keeping a proper balance between conservative and operative management.

Asthma

CLEMENT FRANCIS, M.B., surgeon and i/c of allergy clinic, Metropolitan Ear, Nose, and Throat Hospital. London: Heinemann Medical Books. 1950. Pp. 50. 5*s*.

THERE is a lot of interest in this miniature manual on asthma. From a wide experience Dr. Francis makes many wise and practical remarks about the use of drugs and anæsthetics, the indications for operation on the upper respiratory tract, and the value of skin-testing and physiotherapy. He finds that the difficult cases are the aged, the aspirin-sensitive (4·6% in 1357 cases), the inhaler addicts, and those with advanced bronchitis and emphysema. To learn from the author it is not necessary to accept his conception of vasomotor instability as the main mechanism in asthma; nor does his claim for the value of nasal cauterisation rest on its alleged effect in increasing that stability. An empirical treatment or one whose action is misunderstood can still be valuable. The late Alexander Francis first treated asthma by cauterisation of the nasal septum in 1896. Why have not more doctors tried it? Is it prejudice or distrust of a treatment that has many of the characteristics of a ritual? Or is it that they are not convinced by the figures and the arguments? When Dr. Francis claims that 76% of cases achieve complete relief or 50% improvement, the figures have a familiar ring for asthmatics. Many physicians achieve results as good without the cautery; as possibly would Dr. Francis if he denied this part of his treatment to a group of controls.

Die Leptospirose

Eine kurze Darstellung für Ärzte, Tierärzte, und Gesundheitsbehörden. W. RIMPAU. Munich and Berlin: Urban & Schwarzenberg. 1950. Pp. 157. D.M.10.

Professor Rimpau, who was director of the State Bacteriological Research Institute at Munich until he retired in 1948, is an acknowledged authority on leptospirosis and has himself contributed much to our knowledge of the subject. In this comprehensive and well-balanced review he presents detailed information on the laboratory, clinical, and epidemiological aspects of this group of diseases as they affect man.

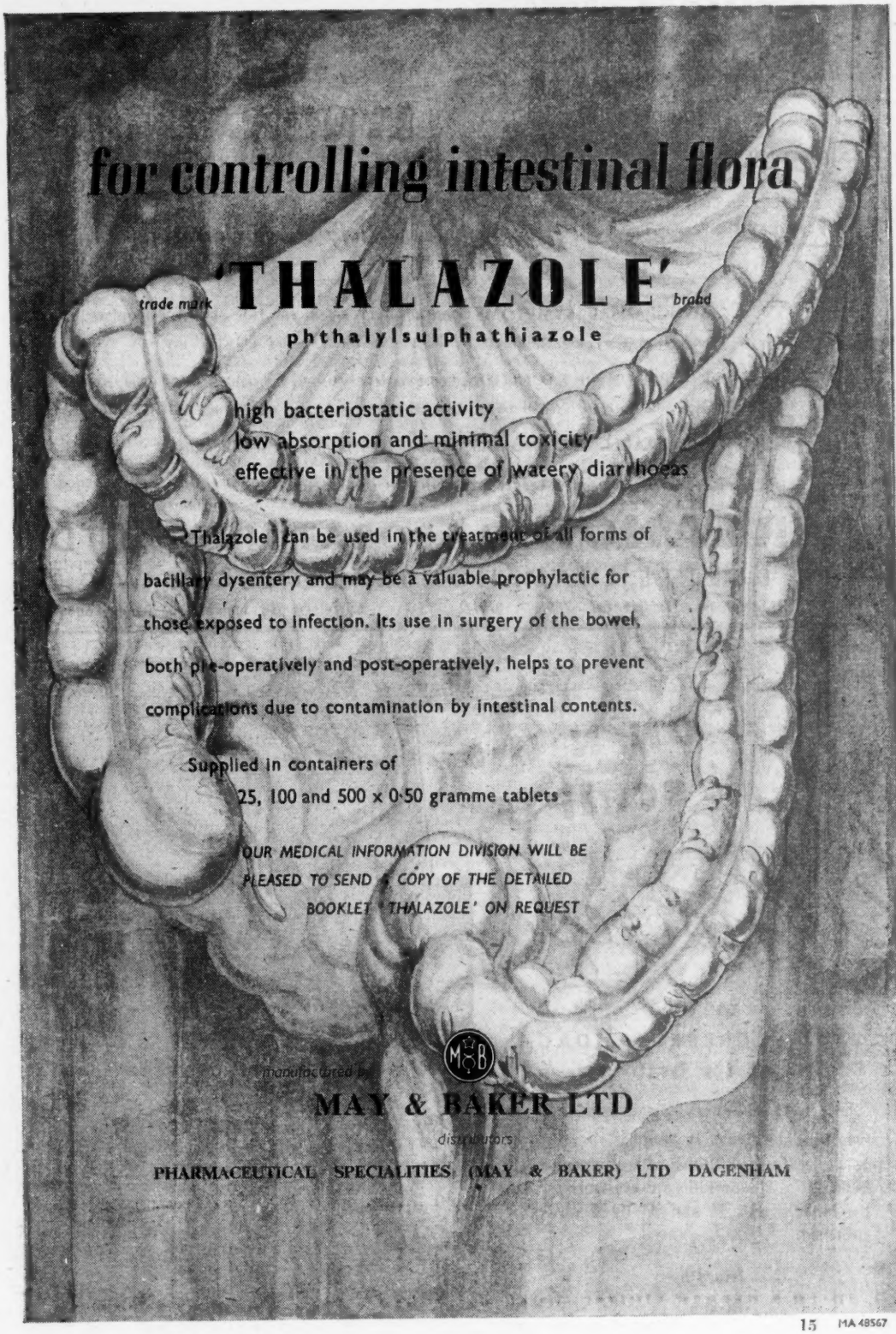
After describing the morphology of leptospires and methods of cultivation, he summarises different views about the viability or otherwise of the granules seen in old cultures, which some workers believe to be a resting phase. Unfortunately he does not state his own opinion. Details are given of the serological techniques used in the study of leptospires in the laboratory, and of the methods employed in carrying out surveys to determine the infection-rate in rodent carriers. Professor Rimpau assesses the value of the different tests and the significance to be attached to their results, and deals shortly with the morbid anatomy and histology of Weil's disease. While rats infected with *Leptospira icterohæmorrhagiæ* remain carriers for life, field-mice carry *L. grippotyphosa* for a few months only, and the infection-rate varies greatly from year to year. Evidence is accumulating that suggests the survival of the organisms in damp soil throughout the winter.

In the clinical section the author differs in one important respect from most other writers. The genus Leptospira contains a number of species, and it has been customary to give a distinctive name to the disease caused by each species—such as Weil's disease and canicola fever—and to group these into "severe" and "benign" forms, depending on the presence or absence of jaundice, and on the mortality-rate. Professor Rimpau prefers to emphasise the essential similarities which are found in all forms of leptospirosis, pointing out that, in every case, leptospires first circulate in the blood, and then settle in the liver, kidney, and central nervous system—tissues for which they have a special affinity. During the early stages there are no distinctive symptoms: only thereafter do individual differences among species and strains give rise to different clinical pictures; and though some symptoms, such as jaundice or meningitis, are more commonly caused by certain species, the species of the infecting organism cannot be diagnosed on clinical evidence alone. For this reason he uses the term "leptospirosis" instead of "the leptospiroses," and describes the different symptom-complexes as variations on a single theme, without reference to the species involved. Much can be said in favour of this viewpoint, and if, as seems possible, streptomycin or 'Aureomycin' supersedes specific antiserum as the most effective treatment, identification of the organism becomes unnecessary. On the other hand, prophylaxis depends either on the use of specific vaccines, or on measures directed against the carrier hosts; and for these purposes accurate information about the species implicated is essential. In stressing the unity of the symptomatology, therefore, care must be taken not to lose sight of the wide diversity of the methods of infection, and hence of the means of prevention.

An Introduction to Medical Photography (London: Staples Press. 1950. Pp. 240. 30*s*.).—Miss Josephine Hunt, S.R.N., medical photographer at the Royal Cancer Hospital, summarises the type of work undertaken by a hospital photographic department, and the equipment used. Her book is not complete enough for reference purposes; but those who want to know what sort of work is involved will find it helpful. The sections dealing with the responsibilities of the photographer to his patient on the one hand, and to the medical staff of the hospital on the other, are particularly to be commended.

Digitalis and other Cardiotonic Drugs (2nd ed. New York and London: Oxford University Press. 1949. Pp. 245. 45*s*.).—Dr. E. R. Movitt brings his review up to date with information about preparations of *Digitalis lanata*, thevetin, and new as well as older preparations of *D. purpurea*. Squill receives a whole chapter to itself which seems hardly deserved. The pharmacological action of digitalis, on which there has been important work in the past few years, is considered in detail. Here as on other topics the author withholds his own opinions, though many would welcome an attempt to integrate differing views on theory and practice. The style is discursive, but the bibliography is comprehensive, and the cardiologist will find good use for the book as a work of reference.

Les Symptômes de la tuberculose pulmonaire et ses complications (2nd. ed. Paris: Masson. 1949. Pp. 983. Fr. 1800.).—This latest edition of Prof. Edouard Rist's book on the symptoms and signs of pulmonary tuberculosis can be confidently recommended to those whose interests lie in this field. It is beautifully written at a tempo one can only call old-fashioned in comparison with so many modern texts whose authors apparently think it enough to convey fact without amenities of style. That facts are here in abundance can be judged from the sections on amyloidosis (25 pages), on pains in the chest (23 pages), and on striæ occurring in the skin of the thorax (10 pages). The book shows evidence of wide personal experience and wide reading, and of deep thought on both. It is not a students' textbook, but it contains a vast amount of information, and should take its place on the reference shelf beside *The Pathogenesis of Tuberculosis*. The footnotes are not the least of its felicities.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THE LANCET

LONDON: SATURDAY, JAN. 13, 1951

Early Movement, Early Rising, and Early Discharge

WHEN a method has been practised for over fifty years, it can scarcely be considered new and revolutionary. But the number of surgeons who favoured early ambulation has until lately been small—too small. Only gradually have we returned from post-Listerian complacency to physiological sanity. LISTER's followers, reared on the teaching of bacteriology and immunity, seemed to look on Nature as an amiable half-wit who must be prevented from ruining their operations. It took the impact of a world war on a generation not yet steeped in orthodoxy to bring back the outlook of HUNTER, and indeed of LISTER himself, that Nature's methods, perfected over millions of centuries, are always purposeful and nearly always right.

For the past thirty years at any rate most surgeons have believed that the less an operation is allowed to interfere with the normal tenor of a patient's life the quicker and the more complete will be his recovery. Those who pass from belief to action—and it is a big step—permit their patients after operation to assume any attitude in bed they prefer, make them breathe deeply and move their arms and legs as soon as they are conscious, encourage them to sit on the edge of the bed to urinate and on a commode to defæcate, and urge them to get out of bed when the spirit moves them, the sooner the better. But this advance in practice, like all advances not conducted on the parade-ground, has been on an uneven front. Some run ahead, perhaps too far. In 1946 LEITHAUSER, whose early experience seems to have been among colleagues somewhat behind the times, suddenly saw the light, and, like many repentant converts, rushed ahead of the preacher. Not merely did he push patients out of bed as soon as they were conscious; he pushed them out of hospital as soon as they could totter. Others still lag behind. One surprising fact emerging from the papers we published last week by Dr. GOODALL and by Dr. PAYLING WRIGHT and her colleagues, is the extent to which conservative practices still linger. Dr. GOODALL states that "in the great majority of wards studied, the normal practice still approximates much more closely to a traditional than to an early ambulation régime." Taking an average of 155 patients in general surgical wards, he found that only about 30% were fully ambulant in contrast to nearly 50% who might have been. Dr. WRIGHT's paper deals largely with gynæcological cases, but it is interesting to note that in 3 of the 4 gastrectomies and all the 3 hernia operations included in her series the patients were still in bed after ten days.

When should a surgical patient become ambulant—i.e., walk round the ward? Surely not as soon as he recovers from the anæsthetic. He can be hustled out of bed at this stage by the taunts, exhortations, and hot-gospelling of house-officers, sisters, and physiotherapists; but how he hates it! Natural desires are a sure guide to procedure in most things—certainly in the selection of diet and the choice between activity and rest. The chief need in the immediate postoperative period is that the process of healing in recently divided and resutured tissues shall not be prejudiced. The arrest of capillary hæmorrhage, the sealing of spaces, the knitting of gaps by fibroblasts, and the bridging of incisions by epithelial cells—all these require rest, complete and uninterrupted, to the injured part, though to that part alone. This can be attained only by rest in bed, while deep breathing and leg exercises are carried out under the supervision of the physiotherapist. After four days the wound is safe against lesser strains, and it will be protected from major ones by nociceptive reflexes that do not reach the level of conscious pain. The worst strains to which a recently repaired surgical wound can be subjected are those of coughing and the use of the bedpan. On the fourth day the sensible and coöperative patient welcomes the first steps to a chair, and Dr. WRIGHT shows that it is physiologically wise for him to do so, since he has arrived at the point where further recumbency would lead to venous stasis. The main danger of the postoperative period is venous thrombosis, of which venous stasis is undoubtedly a major cause, and the infarction and embolism that may follow. Of interest in this connection is Dr. WRIGHT's observation that whereas the average rate of flow in the veins of arms and legs, as measured by the transit of radioactive saline solution, was accelerated in both her groups during the first four days, it was considerably slowed after that time in the non-ambulant group and did not return to normal till after three weeks, whereas in the ambulant group it was above the preoperative rate during the whole of this period.

Dr. GOODALL points out that a policy of early ambulation, adopted universally, would add 10–20% to the effective capacity of a hospital and would reduce greatly the call on nurses' time; though it would also necessitate an increase in basins, water-closets, and day space. But he does not suggest, as does LEITHAUSER who records an average stay of 1·9 days in hospital following interval appendicectomy, that patients, having been got up, should be got out. It is essential to good surgery that a patient should remain under constant skilled supervision until the chance of any systemic or local complication is well past—i.e., for a minimum period of ten days in almost any surgical condition serious enough to demand hospital treatment. A visit to a clinic where early discharge is the rule quickly reveals that it leads to greater waste of beds, for the second and subsequent admissions take more bed-days and involve more paper work than retention till the patient is well. Hasty discharge also leads to increased morbidity, and often to a lamentable end-result.

Laboratory Study of Starvation in Volunteers

IN the last decade the reappearance of famine on a grand scale in many parts of the world has provided all too much material for studying the reactions of man to gradual starvation. But because famine conditions are never ideal for accurate observations, such first-hand descriptions often lack scientific precision. These considerations led Prof. ANCEL KEYS and his colleagues of the University of Minnesota to study semi-starvation in volunteers under laboratory

conditions. General summaries of their observations, which were made in 1943–44, will be found in two papers[1] and in their recent book, *The Biology of Human Starvation*.[2]

The subjects of the study were 32 conscientious objectors who lived in the laboratory for a year. For a control period of 3 months the men were given a diet supplying 3492 calories daily, and on this they maintained their normal health and weight. Then for 6 months the calorie value was reduced to 1570 daily, in the form of potatoes, cabbage, turnips, and cereals, with only a few grammes of animal protein per week —the kind of diet that people in northern Europe consume in famines. On this they lost an average of 24% of their body-weight and developed the classical signs and symptoms of famine victims. By the end of 6 months, however, through a remarkable series of adjustments, most of the subjects were no longer losing weight. Basal metabolism now accounted for only 962 calories a day, compared with the initial 1576 calories. Two-thirds of this fall was attributable to the reduced mass of their metabolising tissues and the remaining third to less intense tissue metabolism. A more significant fall was in the calories used up in their daily activities—from 1567 to 451 per day. No change was detected in the metabolic efficiency of carrying out such standard tasks as walking on a treadmill (after the necessary corrections for loss of weight), so this last fall must be ascribed to voluntary curtailment of physical activity. The men moved slowly and cautiously, climbed stairs one at a time, and eliminated all unnecessary movements—means which closely resemble those observed by LEYTON[3] in prisoners-of-war. At the same time there were profound personality changes. All the men became apathetic, depressed, and introverted, avoiding social contacts so far as possible. Most of them were more emotionally irritable than before, though their overwhelming physical lethargy usually prevented any aggressive behaviour. Their aversion to intellectual effort made them seem stupid, but psychological tests revealed no impairment of memory, reasoning power, or verbal and arithmetical facility.

In the last 3 months of the experiment various methods of rehabilitation were compared. Recovery was slow but ultimately complete. When they left the institute the volunteers were normal in most of their functions, but it was another 9 months before they regained full normality. They seemed to recover best on a good mixed diet of about 3500 calories daily, with light exercise. Additional calories, protein supplements, and special vitamin preparations had no apparent effect on the pace of recovery.

Among the more detailed observations published separately were some important ones on the tissue fluids[4] and the circulatory system.[5] Nearly all the subjects developed famine œdema. During semi-starvation the absolute plasma volume increased only slightly, and the total amount of extracellular fluid (thiocyanate space) was substantially unchanged. But owing to the great reduction in cellular mass there was a *relative* increase in both extracellular fluid and plasma volume. Throughout the experiment there was a close correlation between the volumes, expressed in ml. per kg. body-weight, of plasma and of extravascular fluid. The observations support the view that famine œdema is a reflection of a simple disproportion between the losses of extracellular fluid and of cell mass following a defective supply of calories. In the present case œdema appeared without any reduction in plasma-proteins. The main cardiac finding in the experiment was well-marked atrophy of the heart muscle, radiological measurements indicating an average reduction of 17% in heart volume; a similar atrophy has been noted in necropsies of famine victims. The average pulse-rate became progressively slower for the first 8 weeks, when the basic rate was 35 per minute, but thereafter it remained about the same. The bradycardia was not an indication of heart-block. Electrocardiograms showed reduced voltages of deflections but no important changes in rhythm. Both systolic and diastolic blood-pressures fell, and, in contrast with the pulse-rate, the pressures went on falling to the end of the experiment, the maximum reductions being 30 mm. Hg in systolic and slightly less in diastolic. These changes were completely reversed on rehabilitation, and after 32 weeks most of the cardiovascular measurements were normal. Cardiac function, on the other hand, recovered more slowly, which confirms the empirical finding that famine victims need long and careful convalescence. All the volunteers became slightly anæmic, with an average fall in hæmoglobin level from 15·1 to 11·7 g. per 100 ml. in 24 weeks. The causes of this anæmia are uncertain; but it is agreed that severe anæmia in famine victims is not simply a consequence of lack of calories or animal protein, so a search must be made for infections or other factors adversely affecting the bone-marrow.

The results of this experiment—skilfully conceived and faultlessly executed—will be of great practical value to administrators planning relief measures as well as to doctors working in future famines. And unless means are quickly found to increase the world's food-supplies and distribute them more equitably,[6] periodic famines seem to be an inescapable prospect.

Cell Embolism and Metastasis

THE pathways and propulsion of cells in and out of blood and lymphatic channels remain subjects for fresh inquiry, though they are as old as cellular pathology itself. It appears from the work of MILES and NIVEN[7] that the passage of polymorphonuclear leucocytes outwards through capillary walls is not due simply to their motility and to physical changes of the endothelium in inflammation: for such passage to take place the intravascular pressure must probably exceed that in shock, where leucocytes are not found outside capillaries in infected foci. Likewise the entry of fixed cells into blood and lymphatic capillaries requires both a breach in the vessel wall and a force that detaches the cells and drives them in. The trauma of bone fractures or blast will make a breach for fat emboli; but such trauma does not account for the emulsification or entry of the fat. With regard to tumour cells, there is a tacit assumption

1. Keys, A. *J. Amer. med. Ass.* 1948, **138**, 500. Taylor, H. L., Keys, A. *Science*, 1950, **112**, 215.
2. Keys, A., Brozek, J., Henschel, A., Mickelsen, O., Taylor, H. L. Biology of Human Starvation. Minneapolis: University of Minnesota Press. London: Oxford University Press. 1950. Two vols. Pp. 1385. £6 10s.
3. Leyton, G. B. *Lancet*, 1946, ii, 73.
4. Henschel, A., Mickelsen, O., Taylor, H. L., Keys, A. *Amer. J. Physiol.* 1947, **150**, 170.
5. Keys, A., Henschel, A., Taylor, H. L. *Ibid*, p. 153.
6. Leading article, *Lancet*, 1950, ii, 446.
7. Miles, A. A., Niven, J. S. F. *Brit. J. exp. Path.* 1950, **31**, 73.

that their entry is effected by an invasive property inherent in the cells themselves; and colour is lent to this hypothesis by the identification of hyaluronidase in some mammalian tumours and one fowl tumour,[8] and of collagenase in many.[9] It remains to be seen, however, whether one or both of these enzymes are always produced by invasive growths, and whether they are always absent from benign growths. Secretion of enzymes of the mucinase class might account for extravascular infiltration of collagen and other connective tissues, as well as for breaches in vessel walls; and the possibility that these enzymes are present in actively invasive tumours cannot be lightly dismissed.

Whether enzymes destructive of connective tissue exist in tumours or not, there can be little doubt that ruptures and defects in vessel walls aid the entry of all types of embolic cell. By means of models, YOUNG and GRIFFITH[10] have studied the physical conditions that allow entry by cells lacking invasive power. Their model presupposed that capillaries (represented by a thin-walled collapsible tube filled with circulating fluid) lie freely in a fluid medium (represented by a box reservoir containing the same fluid and polystyrene beads to mimic cells). Beads passed through holes into the tube only when the external pressure exceeded the pressure within the tube. In this experiment an unstable equilibrium existed for a time, during which the terminal segment of the tube oscillated, alternately closing and opening as the internal pressure fell below and rose above the external pressure. In living tissues, however, interstices between fibrils of connective tissue are normally filled, not with fluid, but with a jelly-like substance which liquefies locally in inflammation and œdema; and YOUNG and GRIFFITH went on to investigate what happens when the collapsible tube is surrounded by a continuous glycerin jelly. With increased pressure in the tube the alkaline fluid contained in it was forced through a preformed hole into the jelly, which eventually broke up as the pressure increased. When the pressure in the tube was again reduced below that in the gel (which was impregnated with phenolphthalein) masses of broken-up jelly passed into the tube. The model suffered from one serious limitation, of which YOUNG and GRIFFITH are aware: the tube representing a capillary vessel was not, in their own words, "braced and guyed by strands of reticulin and collagen." When extravascular pressure rises, these external attachments make all the difference to the lumen of thin-walled vessels; instead of closing, as RIBBERT supposed and the model shows, the walls of the vessels are pulled apart by the fibrils. This opening mechanism was first suggested by GASKELL,[11] and its existence has been confirmed by PULLINGER and FLOREY.[12] Thus the conditions that co-exist in life—rise of extravascular pressure with patent blood and lymph capillaries—are those shown by YOUNG and GRIFFITH to favour cell embolism.

By measuring the pressure inside intratesticular grafts of Brown-Pearce carcinomata and comparing it with the pressure in normal ungrafted testes of the same rabbits, YOUNG and his colleagues[13] have established that the pressure in the tumour, measured as tissue resistance to injected saline, rises during the healthy growth of grafts, whereas in a normal testis the pressure remains remarkably constant; and this implies that pressure in the tumour rises relatively to intracapillary pressure, which is assumed to be the same in both testes. Only a breach in the vessel wall is then necessary for forced entry by embolic tumour cells. Holes or ruptures are obviously made by hæmorrhages and by the defects often found in sinusoidal vessels of rapidly growing tumours. YOUNG and his co-workers suggest that hæmorrhages may be due to a temporary rise in intravascular pressure, which causes the endothelial walls to burst mechanically. It is more likely, however, that blood leaks, or is forced, out of the growing tips of the capillaries that form continuously in response to the stimulus of the ever-growing tumour, and that tumour cells enter these same tips as well as the defectively lined sinusoids. Hæmorrhages in their van are a feature of growing capillaries; and the added volume of blood increases tissue pressure and stretches open neighbouring lengths of vessel. These are widened also by products of inflammation—œdema fluid and plasma, and possibly fluid exuded from vessels made hyperæmic by X-irradiation. YOUNG and his associates draw attention to many conditions likely to increase pressure inside tumours: further growth and rise of pressure as time passes; aspiration biopsies and other factors causing hæmorrhage; local anæsthetics adding fluid under tension; and palpation entailing compression from without.

Though none of these mechanisms can be confidently blamed for any particular metastasis in man or in animals—so capricious are the ways of tumour cells—nevertheless their capacity for harm warns us to avoid them.

Danger in the Home

ON Dec. 14 the *Radio Times* published a sketch to illustrate the Postmaster-General's annual injunction to "post early for Christmas." It represented a little girl in a nightdress leaning across an unguarded open fire towards a Christmas stocking hanging from the mantelpiece. An innocent, sentimental drawing; yet hundreds of little girls in this country are burned every year, many of them fatally, in doing just this kind of thing. A document recently issued by the Ministry of Works[14] shows that in 51 out of 306 accidents to children which were studied in detail the cause was lack of a fire-guard, and in a further 14 the fire-guard provided was either too wide in the mesh or so flimsy that any child could knock it over. Of nearly 7000 fatal accidents in the homes of England and Wales every year, about a fifth are due to burns and scalds; and of course children are the chief victims.

The report is issued for the benefit of research-workers and "not for general publication"; but its findings should have headlines in every popular newspaper. The sources of information cover a wide area, and their volume should in itself lend weight to the results of the investigation. For fatal accidents the figures supplied by the Registrar-General and the

8. Pirie, A. *Ibid*, 1942, **23**, 277.
9. Gersch, I., Catchpole, H. R. *Amer. J. Anat.* 1949, **85**, 457.
10. Young, J. S., Griffith, M. D. *J. Path. Bact.* 1950, **62**, 293.
11. Gaskell, W. H. *Arb. physiol. Inst. Leipzig*, 1877, **11**, 143.
12. Pullinger, B. D., Florey, W. H. *Brit. J. exp. Path.* 1935, **16**, 49.
13. Young, J. S., Lumsden, C. E., Stalker, A. L. *J. Path. Bact.* 1950, **62**, 313.
14. Ministry of Works, Chief Scientific Adviser's Division: An Inquiry into Accidents in the Home.

records kindly provided by the coroners for North London and Liverpool have been freely used, and they tell a consistent story. Of late years public attention has largely focused on road accidents, and it is harder to classify home accidents so as to make a comparison; but the following figures (for years before the derationing of petrol) are not far from the mark as representing deaths:

—	On the road	In the home
1945	4005	5996
1946	4161	6287
1947	4187	6835

When the years 1943, 1944, and 1945 were studied in detail by the Domestic Accidents Panel of the Ministry of Works, it was found that just under half the deaths were due to falling, and nearly a fifth to burns and scalds. In an analysis of children's deaths following accidents in the home a total of 2348 boys and 1791 girls under fifteen was recorded. As might be expected, there was among boys a preponderance of "hazardous" accidents, such as falls, electric shock, and explosions; but girls showed a sad superiority in burns, especially by clothing catching fire: between one and fifteen years the figures were boys 96, and girls 301. As a cause of death for children under one year, suffocation was an overwhelming cause—1026 boys and 702 girls out of totals of 1181 and 814. At other ages the noteworthy figures are the high percentage of fatal falls in women over sixty-five, and of course the high rates for women between twenty and sixty-five, compared with men of the same age.

In the study of mainly non-fatal accidents valuable information was received from a wide variety of sources, including the Birmingham Accident Hospital, the almoners of a number of London hospitals, the Edinburgh city police, and health visitors on the staffs of medical officers of health. In the Birmingham Accident Hospital about 5000 domestic "accidents" patients are treated each year. As the sample for examination [15] the investigator chose just under 3000 cases of accident within the home which had been treated in eight months of the year, two months being taken from each quarter. It is interesting to note that falls and cuts and bumps were most frequent in the summer months, and burns and scalds in November–December. The latter causes take the highest place among children under two years, but give place to other injuries when the boys begin to knock around. When the proportion of accidents in a given age-group was related to the proportion of the population in that age-group, the following ratios were obtained:

Age	0–4	5–14	15–64	65+
All accidents	2·8	1·1	0·8	1·1
Falls	2·6	0·9	0·7	1·9
Burns and scalds	4·9	1·1	0·6	0·5
Falling on fire	8·9	0·8	0·3	—
Catching clothing on fire ..	3·4	0·6	0·8	1·1
Pulling over hot liquids ..	11·3	0·2	0·1	—

One of the striking features of this analysis is the high ratio in children under four years, and it is easy to see how important and necessary it is to protect young children, especially against burns and scalds. The Birmingham study also showed that in 1946 40% of the patients were children under ten years of age—double their proportion in the population—and that 4% of the people living within easy reach of the hospital received treatment for home accidents. The reports from other sources—the Edinburgh Royal Infirmary, the London hospitals, and the health visitors—tell much the same tale. Personal rather than structural factors are the main cause of accident, but it is clear that there are most injuries where housewives live in overcrowded and ill-equipped homes; they are distracted by the difficulties of keeping an eye on the children while trying to get through the day's work without confusion and disorder. A long story of fighting against the heavy odds of environment often lies behind such expressions as thoughtlessness, carelessness, or negligence.

The prevention of accidents in the home involves many factors, including personal instruction, propaganda, and attention to safety in construction—especially of stairs and passages, because falls are the commonest cause of injury. The fact that faulty equipment is not a frequent cause of accident is no excuse for permitting dangerous things to be made and sold. We know how to make gas and electric fires safe by placing guards at a proper distance from the source of heat; yet so far hardly any manufacturer has taken advantage of that knowledge. We know too how the dangers of the open fire can be minimised by insisting on the legal requirements about fireguards and making sure that only approved patterns are sold. Every fireplace could easily be provided with sockets to take a standard type of guard. Yet we continue, year by year, to tolerate hundreds of quite unnecessary tragedies.

15. See Castle, O. M. *Lancet*, 1950, i, 315.

Annotations

GENERAL PRACTICE

WE cordially welcome the Central Health Services Council's appointment of a committee on general practice (see p. 104). Much ground must now have been cleared by the English and Scottish councils' committees on coöperation between general-practitioner and other services, and by the B.M.A.'s general practice review committee—not to mention the reports on the subject already published. We trust therefore that conclusions will be reached, and advice offered, within the period of six months that has been mentioned in the press.

APPENDICITIS

THE mortality of appendicitis, though it has fallen steadily since 1920, is still considerable: in this country more than 1500 people died from it in 1946. A survey of 1074 cases of acute appendicitis treated at the Radcliffe Infirmary, Oxford, during the period 1925–48 goes some way towards explaining the reasons. In this review Moloney and his associates [1] remark that the dangerous ages at which to suffer from appendicitis are 5–14 and after 55; and the death-rate for females is 40% less than that for males. One curious feature is that as the social scale is descended the number of deaths falls off. Possibly some difference in the habits of the upper classes—it may be dietetic—renders them more susceptible. The general mortality in the whole Oxford series was 1·4%; and, as would be expected, it was highest (6·2%) in the cases with diffuse peritonitis. Of all the patients 83% were in the surgeon's hands within forty-eight hours of the onset of the attack, yet 25%

1. Moloney, G. E., Russell, W. T., Wilson, D. C. *Brit. J. Surg.* 1950, **38**, 52.

of these already had diffuse peritonitis or localised abscess. The urgency of early operation is further underlined by the observation that of 480 patients with a history of less than twenty-four hours 46 had peritonitis in the flank or pelvis, 25 generalised peritonitis, and 9 a localised abscess. It says much for the training of our younger surgeons that of the 1074 patients in this low-mortality series all but 46 were operated on by registrars and house-surgeons.

Operative technique in this series followed the usual practice. Preference was given to incisions over the site of the disease. The cæcum was inturned after removal of the appendix; and in 4 cases, where this was impossible because of thick infiltration of the cæcal wall, a drainage tube was inserted through the aperture into the cæcum. In a few instances the appendix could not be removed. Drainage was used very sparingly. Even localised abscesses were closed; and indeed abscesses gave more trouble when drained than when they were sewn up. If the abscess is opened, debris is removed, and a chemotherapeutic agent is introduced, prompt healing may fairly be expected without drainage. However, Moloney and his colleagues think that drainage is indicated when surgical intervention has left raw bleeding areas (the older surgeons also took this view) or when a well-localised abscess has thick walls. Cultures revealed most commonly *Bacterium coli*, which was sometimes the only organism isolated. *Streptococcus fæcalis* and anaerobic streptococci were the next most common organisms; *Clostridium welchii* was less often found. Actinomycotic filaments were not unusual in smears. These organisms have varying sensitivity to chemotherapeutic agents, and so logically both the sulphonamides and antibiotics may be used at the same time. Sepsis in the wounds was less when 'Nylon' was used for sewing up than when catgut was employed; and late discharge of sutures was much more common with catgut than with nylon. Lung complications were very rare. Only 1 patient died of pneumonia, and this was an infant who had this disease on admission. There was 1 death from pulmonary embolism; 1 other patient had hæmoptysis from this cause. Femoral thrombosis occurred in only 6 cases. Mechanical obstruction developed in 6 patients, of whom 3 died despite further operation. In view of the extensive use nowadays of intravenous infusion therapy, it is interesting to note that only 35 of 98 cases of diffuse peritonitis were deemed to need this treatment. It was found that, in the absence of paralytic ileus, patients would absorb by mouth or rectum as much liquid as they required.

The majority of patients had left the hospital by the twelfth day, but of the 98 patients with diffuse peritonitis 38 were kept longer than eighteen days. Clearly remarkable progress has been made in the treatment of acute appendicitis.

RUBELLIN: A NEW CARDIAC GLYCOSIDE

In the 175 years since Withering first exploited the beneficial action of the foxglove in congestive heart-failure, the galenical preparation of digitalis, with its uncertain constitution, has successfully withstood the challenge of crystalline strophanthin and is only slowly giving ground to its more serious rival, digoxin. Time will show whether rubellin, a newly isolated glycoside reported by Isaacson[1] from South Africa, should be ranked as a clinical competitor, which will bear comparison with digoxin.

Rubellin has nothing to do with german measles; it is obtained from the plant *Urginea rubella*, a member of the natural order Liliaceæ. The digitalis-like action of this highly soluble crystalline glycoside has been demonstrated by Sapeika.[2] Using ouabain as a standard, he showed that the relative potencies of the cardiac glycosides are, in descending order: rubellin 121, ouabain (international anhydrous) 100, prorubellin (a sugar-free glycoside obtained by acid hydrolysis of rubellin) 50·5, strophanthin 44, lanatoside C 31, digoxin 19, and digitoxin 3·6. In a concentration of 10^{-6}, rubellin had the typical digitalis effect on the isolated frog's heart, as well as on the isolated mammalian (cat and rabbit) heart and on the heart and blood-pressure in the intact animal. Observations in man showed that the effective dose was 0·003 mg. per kg. of body-weight intravenously. Rubellin need not be assayed biologically. It was effective in patients with heart-disease with either normal or abnormal rhythm, acting best in cases of auricular fibrillation and congestive failure. When administered intravenously it alleviated all the urgent symptoms in 2 hours, when its full action became evident. It seems to be useful in cases where, owing to vomiting or unconsciousness, it is impossible to give digitalis by mouth, and where immediate treatment of congestive cardiac failure is imperative, provided that no other digitalis drug has been given within the previous ten days; digitalis may, however, be given by mouth at the same time as intravenous rubellin.

1. Isaacson, B. *S. Afr. med. J.* 1950, **24**, 901.
2. Sapeika, N. *Ibid*, p. 912.

VIRUSES AND GENETICS

Variation among the viruses has attracted much attention in the past not only because of its theoretical interest but also because of its practical usefulness. Thus rabies, as Gordon[1] reminds us, affords the classical example of virus modification in the laboratory put to good purpose. But known types of virus variants are not always characterised by simple loss of pathogenicity on transfer from one host to another. Indeed there seem to be three sorts of variants. Firstly, there are those with modification of pathogenicity without alteration of antigenic characters: the classical 17D strain of yellow-fever virus has for instance lost its pathogenicity in tissue culture without losing its antigenic potency, and this has made it a useful immunising agent in man. Secondly, there are antigenic modifications without change in pathogenicity, as suggested by the observations of Hammon and his associates[2] on the encephalitic agent recovered from mites. This, when passaged in mice, possessed the St. Louis encephalitis virus antigen; yet on egg cultivation the antigen characteristic of Western equine encephalitis virus emerged. Thirdly, there are alterations both of pathogenic properties and of antigenicity. Such have been exemplified by variant influenza virus strains, as shown by Hirst,[3] who passaged virus direct from human material in eggs and showed the strain to be different from that derived by ferret and then mouse adaptation.

The influenza viruses, as Gordon remarks, excel in their "mutability," and all the three types of variation mentioned above have been encountered in laboratory work, in addition to the O–D variation in hæmagglutinin shown by recently isolated strains of virus A. The observations of Isaacs and Edney[4] on the Melbourne virus A strain make it hard to believe any longer in the "purity" of any stock virus. The difficulty pointed out by Gordon in the analysis of virus genetics has lain in the past in the fact that pure clones of particles derived from a single parent particle have not been available. This difficulty was overcome by Isaacs and Edney when they passaged virus in eggs at high dilutions whereby less than half of inoculated eggs yielded virus growth. At such limiting dilutions, egg fluids were either non-infective, or contained virus with properties resembling the parent, or else yielded a variant strain with new

1. Gordon, F. B. *Ann. Rev. Microbiol.* 1950, **4**, 151.
2. Hammon, W. M., Reeves, W. C., Cunha, R., Espana, C., Sather, G. *Science*, 1948, **107**, 92.
3. Hirst, G. K. *J. exp. Med.* 1947, **86**, 357.
4. Isaacs, A., Edney, M. *Brit. J. exp. Path.* 1950, **31**, 209.

properties which thereafter bred true. This technique was later used by Burnet and Lind [5] in their work on the neurotropic W.S. influenza virus which produces encephalitis in mice. The strain was coupled up with one of several other strains which would not give rise to encephalitis and which had antigens distinct from W.S. The progeny of the "marriage" induced encephalitis but exhibited the antigen of the second parent, and passage at limiting dilution provided no evidence that the phenomenon was due to simple mixture. An example of such a new strain was obtained by using neurotropic W.S. and swine influenza virus and thereafter demonstrating a neurotropic virus possessing the swine antigen. Genetic recombination has, of course, already been shown in the case of the *Bacterium coli* T bacteriophages [6 7]; but the demonstration of a similar phenomenon in an animal virus is new and confirmation will be eagerly awaited. It seems that mutation is not the only way in which virus variants arise, and one begins to wonder how Nature, or man himself, ever manages to keep a virus unchanged in character.

BRISTOL'S PROBLEM FAMILIES

"HE just lets time roll by," used to be the burden of a comic song; and in some families its underlying principle is the accepted design for living. The wonder is, perhaps, not that there are such families but that there are not more of them. Luckily for the rest of us they seem to be on the wane. Fifty years ago Charles Booth wrote of a submerged tenth: today Dr. R. C. Wofinden [8] thinks the fraction much smaller, "probably less even than a submerged hundredth"—which goes far to allay the fear that these highly prolific, mainly unproductive, sometimes delinquent, yet often contented people are on the increase. Dr. Wofinden has just completed, on behalf of the Problem Families Committee of the Eugenics Society, a pilot inquiry in Bristol, and four others are planned for Luton, Rotherham, the West Riding, and Kensington, with the object of standardising a suitable method of investigation which might prove useful later to other committees, and possibly even to an interdepartmental committee interested in this subject.

Though the method chosen at Bristol proved to have drawbacks, the inquiry confirmed some known facts and brought others to light. Local-authority officers and many voluntary agencies collaborated, and a field worker visited the 155 families studied. More than half of them were housed on corporation housing estates, and some had been, or were about to be, evicted from such estates because of failure to pay the rent. This seems at first glance to justify the old cry of "once a slum-dweller always a slum-dweller"; but Dr. Wofinden is at pains to remind us that this is untrue. He quotes an unpublished study of 50 rehoused families made by Dr. I. G. Davies, who traced back the history both of the successful tenants and the failures. Both groups, he found, had come from the same slum conditions; but in the failures personal characteristics outweighed the influence of improved conditions. In general the standard of intelligence among them was low, and they could not plan their domestic life with any system: "there was a 'hand-to-mouth' flavour in all their actions." He concluded that they would need training in domestic methods and regular supervision if they were to become good tenants; and Dr. Wofinden thinks there is much to be said for rehousing families of this kind in a "half-way house"—a reconditioned older property—and promoting them to a corporation house only when they have learned to live in a decently hygienic fashion. In Bristol there was little overcrowding, in the official sense, despite the fact that the problem families were often large: the average number of children was 5·8 per family. But they were sociable, and apt to crowd into one or two rooms—the more readily since there was seldom much in the way of furniture to attract them into the others. The children, nearly all of them dirty, verminous, ill clad, and ill shod, were almost uniformly—and somewhat disconcertingly—happy. The Curtis Committee laid much stress on the importance of family life, especially happy family life; so the problem becomes, as Dr. Wofinden says, how to reclaim the family without breaking it up.

Of the fathers, mainly unskilled and semi-skilled workers, less than half were in steady employment, and the rest took what casual employment they could get, or did not care for any work. Rather more than half were mentally subnormal, and about a quarter had a weak moral record in which such things as chronic alcoholism, imprisonment, bigamy, and incest figured. Others had psychological or physical defects. More than half the mothers appeared to be in poor health, and three-quarters of them were mentally subnormal. No less than 101 of the 882 children of these 155 families are in mental-defective institutions, approved schools, special schools, or residential children's homes, or boarded out with foster-parents. Thus 11·4% have become a direct charge on the State. The rates of juvenile delinquency and of illegitimacy were high. Other studies have revealed a high infant-mortality rate in such families as these, but in Bristol the rate was not significantly higher among them than among other families in the city.

Dr. Wofinden suggests that the welfare services departments of the local authorities should be made responsible for problem families in their areas, and that they should work in close touch with the health department. A small committee of officers might be set up, representing the health, housing, welfare, education, and children's departments, and with some coöpted representatives of voluntary bodies, to confer on the needs of these families. He also considers that convalescent care should be available for ailing mothers, and that social reablement centres should be set up where mothers can be admitted for a time, with their families, and given some training in their job. Home advisers, who will go into the homes and actually help with the housework while they teach, have proved their value, and should be more widely used. Where furniture is needed he thinks the local authority should be able to give or lend it. He believes that these measures, with a realistic rehousing policy based on the "half-way house," would go far towards reducing the submerged hundredth to a still smaller fraction.

EGYPTIAN SILVER JUBILEE

THE 25th anniversary of the foundation of the Fuad I University, Cairo, was celebrated on Dec. 27 in the presence of H.M. King Farouk. Addresses of congratulation were presented by the vice-chancellors of the universities of Oxford and Cambridge, the president of the Royal College of Physicians, the junior vice-president of the Royal College of Surgeons, and the president of the Royal College of Obstetricians and Gynæcologists. The honorary degree of doctor of medicine was conferred on Dr. Russell Brain, that of master of surgery on Sir Cecil Wakeley (in absentia) and Mr. Philip Mitchiner, and that of master of gynæcology on Prof. Hilda Lloyd. The new graduates were invested by Dr. Mooro Pasha, dean of the faculty of medicine.

Dr. GEORGE CATHCART, consulting surgeon to the Throat Hospital, Golden Square, London, died in Edinburgh, on Jan. 4, at the age of 90.

5. Burnet, F. M., Lind, P. E. *Aust. J. Sci.* 1949, **12**, 109.
6. Delbrück, M. *Colloq. int. Centre Natl. Recherche sci.* 1949, **8**, 91.
7. Hershey, A. D., Rotman, R. *Genetics*, 1949, **34**, 44.
8. Problem Families in Bristol. London: Eugenics Society and Cassell & Co. 1950. Pp. 60. 2s. 6d.

Special Articles

THE MEDICAL CARE OF THE ELDERLY

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NO-ONE who reads the medical papers can fail to be impressed by the number of careful reports on conditions of the elderly, sick and healthy, in hospitals and in their own homes, throughout the country.

Excellent surveys have been made by British Medical Association special committee (1947) and by Sheldon (1948) on field conditions in large centres, while the treatment and care of the chronic elderly sick in hospitals have been the subject of painstaking surveys by Thomson (1949) and many others. All these authors stress, with almost monotonous regularity, the rising proportion of elderly to younger members of the community, to be expected as a result of increased longevity and a falling birth-rate. Conditions of neglect under which the aged live have been noted in this country and in the United States of America (Thewlis 1946). In support of the youngers, on whom the care of the elderly falls, Sheldon (1950) has made it clear that the wage-earning community is probably bearing as heavy a burden of old age as it can tolerate.

The attitude of neglect towards old age and its problems has had many causes: some old people are inarticulate, and unduly passive towards their disabilities, while others are querulous and difficult; all are of diminishing significance in the community, and as such, their complaints can be more easily disregarded; furthermore, some are unpleasant in their habits. While our well-developed moral sense quite properly prevents us from feeling any desire to apply euthanasia to the aged sick, it is seldom strong enough to make us give human sympathy or unselfish help in their needs. They are thus in some respects the counterpart of the sacred cow of the Hindus.

Another cause of neglect of the old is ignorance—a failure to understand how very real their needs are. A new attitude is however steadily arising, and much practical sympathy is being shown, though this is at present incoördinate. Hospital inpatient and outpatient services, the Red Cross, the W.V.S. ("meals on wheels"), county-council welfare organisations, and private charities are all trying to do something—in many areas with no coördinating committee.

Some charities are still working on an outdated system of relief. Thus some almshouse trusts give help in money, rather than in goods or service; we then find old people living in almshouses in a state of neglect, and in certain areas the neglected poor may even be found inside and not outside the almshouses. A capable and vigorous middle-aged woman, appointed as warden, will often make a remarkable improvement in the standard of living. Without having to give too much help herself she will know where to get the help needed to keep the old people well cared for.

The aged poor of any neighbourhood derive help from many organisations. Medical care comes from the State doctor and the district nurse; upkeep from the State (old-age pensions) and from private charity (almshouses and trusts), as well as from local-government sources (county-council hostels and "outdoor relief"); at Christmas, gifts from private charities are added. Day-to-day help is given by "meals-on-wheels," provided either by the W.V.S. or the local authority, and by the local authority "home helps" scheme, but in some areas these two services are given only to those who are medically certified as being "sick." Old-age pensioners associations help to supervise the needs of the old, to represent their interests, and provide them with social and club facilities. When an old person becomes seriously ill, he is—or should be—moved to hospital; but the hospital service (which should be merely ancillary to the greater problem of care of the aged) is quite unable to cope with the calls made on it.

COÖRDINATION OF EFFORT

A State-sponsored committee should be set up in each administrative area to promote the welfare of the aged, survey the various organisations already promoting their welfare, and assess what is needed to provide a comprehensive scheme. A Government body (local or central) should be approved to receive the recommendations of these committees, and to afford them help which is beyond their own power to obtain. Organisations which would be represented on the committee would include:

House committees of local hospitals.
Red Cross and St. John organisation.
W.V.S.
Old-age Pensioners' Association.
Charitable trusts.
Clergy.
Committees of old people's homes, hostels, or clubs.
Geriatric social workers.
District nurses.
General practitioners.
County-council welfare department.

A careful report made by such a committee, after six months' work, would awake much public interest in the area, and this might lead each community to take a pride in its record for care of the elderly, as it does in the achievements of its football team.

CLINICAL GERIATRIC PROBLEMS

The ultimate problems for scientists are the reasons for ageing, and its prevention. These may never be solved, but we can at least learn more of the variations of disease in old age. Important changes of attitude are now becoming general (Rudd 1950): rehabilitation, especially, has come right to the fore, but it can only be successful if based on a sound and complete diagnosis of the case—a task for experienced geriatric clinicians. These need greater opportunity for investigating disease, the support of a more comprehensive specialist service in the various departments of medicine and surgery, and more knowledge of necropsy results confirming or disproving clinical findings. Conferences, too, are needed on geriatric clinical problems for those practising this branch of medicine, and postgraduate courses for general practitioners anxious to apply new knowledge. Family doctors should have an increased capitation-rate for this time-consuming branch of their work. Those with a large list of old people are hard pressed to give weekly injections of mercurial diuretics if they have a correspondingly long list of wage-earners and children. The general practitioner's need for increased diagnostic facilities cannot usually be met by the general hospital outpatient department: geriatric outpatient departments will be required, preferably in geriatric hospitals. The detailed lay-out of such a department is beyond the scope of this paper, but the principle may be outlined:

Aims: maintenance of health and independence of the elderly; diagnosis of disease; treatment of major and minor defects.

Staffing: geriatric physician; geriatric nurses; physiotherapist; occupational therapist; social workers (and possibly geriatric district nurses).

Special facilities: pathological examinations (a postal service would be adequate); radiology for bone and chest conditions (cases requiring more elaborate investigations could be referred to a general hospital).

In hospitals which have no physiotherapy departments, the geriatric outpatient department should be linked up with an outside physiotherapy clinic, but preferably massage should be given by personnel on the geriatric staff whose methods are geared down to the

needs of the elderly. A hospital car service would be needed to collect each morning's patients. The department would also be a coördinating centre for the many organisations interested in the welfare of old people; and the moderate expense of setting such departments up would be offset by the advantages they offer.

The prime need of old people, however, is social care: medical attention takes only second place. The social worker is thus a necessity in any geriatric organisation; and she can learn far more of the real needs of the person visited than the busy doctor is able to do. She will also find out whether the doctor's recommendations are being carried out, and what social factors are frustrating his efforts. The geriatric district nurse might also enter the picture, to carry out continuation treatment under the doctor's instruction. This would ensure that the enormous numbers of elderly cardiac patients requiring mersalyl injections were given their weekly dose with the regularity which their condition demands.

RECOMMENDATIONS

1. Wider knowledge of clinical geriatrics is urgently required, and this calls for more intensive practice of medicine among the aged, more careful investigation of their ailments, and more necropsy studies.
2. Regional postgraduate courses in geriatrics are needed.
3. An increased capitation fee should be given for patients in this age-group, to compensate the general practitioner for the time spent on them, and to encourage him in the practice of geriatrics.
4. Geriatric outpatient departments should be set up.
5. There should be a closer liaison between general practitioner and social workers.

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A SCHOOL WITH A VIEW

THE forerunner of the modern approved school was the reformatory, often a forbidding place, in which work, discipline, and moral training were applied as the official remedies for badness in boys. The pioneers were not far out in their ingredients: these three go to the making of all good citizens, both in and out of approved schools. But in the hundred years since the reformatories were started we have begun to find that the remedies are more effective, and the results more lasting, if the moral training is accepted and assimilated into the character, the discipline imposed from within, and the work done with a sense of personal achievement.

The boys who arrive at the Cotswold School,[1] aged anything between thirteen and sixteen, have seldom had much moral training, and such discipline as they have known has been erratic and arbitrary. Many of them don't care for work. Yet over the past nine years 77% of those leaving the school have proved to be responsible people, never coming again into the hands of the police. A further 10% have been brought into court for minor offences (such as riding a bicycle without a rear-lamp); and only 13% have got into serious trouble. Considering how late (speaking in terms of development) they come, and how short a time some of them stay, these results are surely remarkable.

THE APPROACH

The change from a restless rebellious child to a reasonable and mannerly young person with a sense of responsibility is not achieved in a moment; but quite probably it begins from the moment the delinquent boy sees the school. "Is this where we're going to have lunch?" one asked, as he saw what he took for a hotel lying hospitably open to the world: no barbed-wire, no men with guns to gratify a film-fed imagination, but spacious grey buildings, some old some new, lying among gardens, lawns, and playing-fields in a Cotswold valley. He must have felt at that moment, however obscurely, that his fellow countrymen hardly regarded him as an outcast or an enemy.

There are three houses in the school, all good but all as different—Mr. C. A. Joyce, the headmaster, finds—as the personalities of the masters in charge of them. In one there is almost military precision, the boys being required to do things to time and keep strictly to the house-rules. In the second they are expected to take more responsibility for their own behaviour and to work to a much less rigid time-table. In the third there is almost a random atmosphere, but everybody seems to be happy and at home in it. The headmaster asks every new boy whether he thinks the stricter house would suit him best, or one of the others, and takes his answer into account when placing him. It is quite common, he finds, for a boy in one house to ask to be transferred to another.

Another subject always comes up in that first conversation with the headmaster.

"Oh, and by the way," he says as the boy is leaving, "if you think of running away at any time, just come and have a word with me first, will you? . . . What are you grinning at?"

"Because you wouldn't let me go," comes the invariable reply.

"I would; I couldn't stop you, anyway. But if you'll come to me first I'll explain exactly what you'll be losing by it. You see, you get fourteen days' holiday; but if you're away for three days without leave, you lose three of them . . ."

This is the standard teaching about penalties: "You don't *have* to have them, you bring them on yourself."

THE WAY IT IS DONE

Boys under fifteen get ordinary schooling, but with the addition of regular classes in suitable ethics ("based on Aristotle, but I don't tell them that"). The older boys can learn many different trades and occupations. The home farm gives them experience in milking and the care of farm animals; and there are plenty of rabbits and birds and other pets to look after. Gardening is taught by a Scottish master, a personality, who puts up outspoken weekly reports on their work and characters on a public board, and is both enjoyed and respected. There are carpentry and engineering shops, classes in shoemaking, and a building and decorating department. The teachers take pleasure and pride in their crafts, and that attitude is catching.

Manners are friendly and good. Boys passing each other or crossing the path of a visitor pass the time of day; and they notice and comment on any failure in manners among members of visiting schools. Through the whole curriculum runs moral training, implicit and explicit. The religious background is important, in the headmaster's view. The boys take a large share in the services in the school chapel, and though only one service in the week is compulsory more than half the boys come to the three other services at which attendance is voluntary. On weekdays evening prayers are held in the school hall. When the school bell rings, at eight o'clock, there is a minute of silence; boys wherever they are in the school pause in what they are doing and stand, to observe it. Afterwards they and the masters gather in the school hall, and there is a short talk, lasting three or four minutes, from the headmaster,

1. Managed by the London Police Court Mission.

Visit of H.M. Queen Mary.

usually on some subject suggested by one or other of the boys; prayers follow. Letters from boys who have left the school show how often some point or other in the little homily goes home; at all events this family gathering in the evenings is remembered by many with serious affection as the centre point of life in the school.

But moral standards have to be acquired at many levels. The newcomer to the school sees no harm in pinching cigarettes or fruit; so the first simple device is to ensure that he finds it does not pay. The boy who takes twenty cigarettes is made to pay back thirty; the boy who steals fruit is compelled to pay for it at retail price, though by honest trading he could have it at the wholesale rate. But while he is learning, at this level, that by cheating he only robs himself, he is also beginning to find how pleasant it is to be trusted and praised; and self-interest as an incentive is gradually displaced by self-respect. Senior boys can become prefects (though without powers to inflict punishment accorded to prefects in public schools); and those who are due for discharge in a few months' time graduate into the "discharge house," where they have their own dormitory and sitting-room, wear long grey flannels and marvellous "discharge" ties, and need no resident master to supervise them.

PENALTIES

Human nature is not amenable to pure reason. Before any of us gives up the egoism with which he was born, and consents to live socially, he must concede that there is "no future" (as the Cotswold schoolboys say) in crime, or even in antisocial behaviour. Mr. Joyce has found that, with some boys, penalties can be used constructively to teach this elementary fact. Feeding penalties are now forbidden (as indeed they should be for growing children) but he does make use of detention for the determined rebels. The boy who defiantly refuses to do his work goes into confinement—in the visitors' room. Here he gets a comfortable bed with a pink eiderdown, pictures on the walls, plenty of books, the wireless, a private garden with an aviary, and three good meals a day; but no society other than that of the master whom he can summon by bell to attend to his needs. After twenty-four hours in these surroundings—scornfully dubbed "sissy" by the school at large—he is usually ready to come out and join in. And if he wants freedom on these terms he has only to ring the bell, as a notice on the wall informs him. Nor does he get shut up without plenty of warning. The headmaster explains quite clearly in advance that if he chooses to do his share like the rest he is entitled to their privileges; if he chooses not to, then he chooses the penalty as well and he, nobody else, has imposed it. Incidentally, Mr. Joyce believes that official penalties, however modified, should not be abolished entirely. If there are no official penalties, he finds, you get unofficial punishments creeping in.

THE FOUNDATIONS OF SOCIAL BEHAVIOUR

The school has good games teams and plays other schools at times. Some boys who had just returned from playing a public school spoke hotly of the miserable discomfort in which their friendly hosts were living. "No chairs or backs to the seats—just forms—and no separate tables in the dining-room. Nothing like as good as our place!"

Is it justifiable to place the delinquent in more agreeable surroundings than the well-behaved sons of the rich? It depends what the school can bring to the characters of the boys in it. As a rule the public-school boy has behind him a secure home, and parents who have good moral standards and are capable of showing steady affection and giving sound guidance; at home he may even live a little "soft." For him school is, and probably should be, a toughening experience. Most delinquent boys have no such background of security: they come from broken homes, from scenes of family discord, or from no home at all. They have had little training in self-control, and have acquired few liberal principles. For them the school must provide the stable background which they never found at home: it must not toughen the little tough still further. While there is no "soft" living at the Cotswold school (the equipment is strong and plain as it usually needs to be in any strictly male society, whether juvenile or adult) the surroundings are beautiful, and the approach friendly. Those who do not respond to the new chance it offers them are few.

Perhaps the best tribute to the work of the school is to be found in the fact that many of the boys like to revisit it; recently five old boys came down to stay for the inter-house dramatic competition, and one even brought his wife for part of the honeymoon.

CENTRAL HEALTH SERVICES COUNCIL

THE Central Health Services Council has appointed a committee to consider "whether the existing arrangements for engaging in general practice under the National Health Service are such as to enable general medical practitioners to provide the best possible standard of service and, in particular, to advise upon (i) the range of work and standards of practice which should be expected from the general practitioner by the public and medical profession; (ii) types of general practice; (iii) mode of entry into general practice; (iv) non-medical help; (v) equipment and environment; (vi) method of remuneration; (vii) liaison with hospital and specialist services; (viii) liaison with local authority services."

The members are Sir HENRY COHEN, F.R.C.P. (Liverpool) (chairman); Dr. G. O. BARBER (Dunmow); Dr. S. C. BARNES (Wirral); Mr. N. F. BAYLIS (clerk, Nottingham County and City Executive Council); Dr. W. RUSSELL BRAIN, F.R.C.P.; Dr. J. A. BROWN (Birmingham); Dr. B. CARDEW (general secretary, Medical Practitioners' Union); Dr. H. G. DAIN (Birmingham); Sir ALLEN DALEY, F.R.C.P. (M.O.H., County of London); Dr. E. A. GREGG (chairman of council, British Medical Association); Dr. W. V. HOWELLS (Swansea); Dr. ENID HUGHES (Ruthin); Alderman Mrs. V. F. KING (chairman, Southampton Executive Council); Prof. HILDA LLOYD, F.R.C.O.G.; Dr. W. N. PICKLES (Aysgarth); Dr. A. TALBOT ROGERS (Bromley, Kent); Mr. E. W. SCORER (member of Sheffield Regional Hospital Board); Dr. STEPHEN TAYLOR (London); Dr. J. S. THOMAS (Manor Park, London); Mr. H. P. TRAVIS (secretary, Bolton Hospital Management Committee); Sir CECIL WAKELEY, F.R.C.S.; and Dr. C. W. WALKER (Cambridge).

The secretary is Mr. H. N. Roffey of the Ministry of Health. Any person or body wishing to submit evidence to the committee should in the first place give notice to the Secretary, Room 358, Ministry of Health, Caxton House, Tothill Street, S.W.1.

DINNER TO LORD HORDER

LAST Saturday over 150 members of the Fellowship for Freedom in Medicine and their wives or husbands assembled at the Park Lane Hotel to pay tribute to Lord Horder on the eve of his 80th birthday. The company included members who had come from all parts of England, and Sir Henry Dale, F.R.S., read telegrams from a number of well-wishers who were unable to be present. Sir Henry said that, as one who was some years younger than the chief guest, and as one of his pupils, he was proud to be present on this very special occasion.

Proposing the toast of the evening, "Lord Horder, good luck to him and to the Fellowship for Freedom in Medicine," Dr. R. Hale-White expressed the belief that, however great Lord Horder's service may have been to profession and public as a consulting physician, he was rendering a greater service now in his stand against the barbaric attack on Medicine. When the Act became law many were horrified; some said so; a few said "What can we do?"; but nobody did anything much except Lord Horder. Dr. Hale-White went on to pay tribute to the enormous amount of work that Lord Horder had done for the Fellowship, and how his wisdom had guided it. Turning to the guest of the evening he said: "You tell me that you are 80 tomorrow. In age it is not the number of years that counts, but the man. You combine the wisdom and the experience of age with a love of fun and a zest for life that many leave behind them in their teens. I say you are the man, more than any other, that doctors up and down the country look to to show them a way out of the mess, and that goes for the public too. It is due to the steadfastness of your actions, and to the fact that you will not tolerate any division of the profession into specialists and G.P.s, those inside the Act and those outside, physicians and surgeons, the senior and the junior, or even the profession and the public."

Lord Horder's speech in reply was characteristic in its telling phrases and witty asides. He was greatly moved by his reception.

Public Health

DOES VACCINATION HELP TO SPREAD SMALLPOX?

C. KILLICK MILLARD
M.D., D.Sc. Edin.
MEDICAL OFFICER OF HEALTH FOR LEICESTER, 1901–35

IF I were asked in what principal respect my position as regards the vaccination question differed from orthodoxy, I think I would say: In making a distinction between the effect of vaccination upon the individual and its effect upon the community. When I first pointed out this distinction many years ago it was rather scoffed at. The community, it was said, was made up of individuals; therefore if vaccination benefited the individual by protecting him from smallpox, it must necessarily benefit the community. Nevertheless it is quite conceivable that a thing may be beneficial to the individual and yet detrimental to the community. Take the analogous case of smallpox inoculation. When this was introduced into this country in the 18th century, it was certainly beneficial to the individual, in that it reduced the risk of his dying from smallpox. Like vaccination, it gave him a mild attack of disease in order to prevent a more severe attack later on. At first it was believed to be a very real blessing; but after a time it was discovered that inoculation had a very serious drawback from the point of view of the community—it tended to spread smallpox, and often smallpox of a virulent type. Ultimately it was made illegal.

Now I submit that vaccination, like inoculation, has a definite tendency to spread smallpox, and (what is most important) smallpox often of a virulent type. It does this because, after its full protective effect has worn off, it mitigates an attack and is thus very apt to mask the true nature of the disease; and the modern methods of controlling smallpox (chiefly isolation and close surveillance of contacts), depend entirely for their efficacy upon prompt recognition of each case.

OPINIONS FROM THE PAST

The part played by mild modified cases of smallpox which have escaped recognition—"missed" cases—has of course been long admitted. Here are some expressions of opinion from medical officers of health (now deceased) who had practical experience of fighting smallpox:

Dr. J. NIVEN, M.O.H., Manchester: "It is not too much to say that by far the most important factor in the spread of smallpox in Manchester has been the over-looking of cases. . . . The attack as a rule was so mild that no medical advice was sought, or it was not recognised as smallpox by the medical attendant. In fact this matter is of so much importance that it is not too much to say that if there had been no case over-looked there would have been practically no smallpox outbreak in Manchester." (Health Reports, 1902 and 1903.)

Dr. A. K. CHALMERS, M.O.H., Glasgow: "As in past outbreaks we are again finding that one of the greatest obstacles to effectively coping with the disease is the occurrence of an extremely mild and modified form which escapes recognition until, as a result, secondary cases of a graver nature arise." (Smallpox Report, 1903.)

Dr. W. E. ARMSTRONG, M.O.H., Newcastle upon Tyne: "With respect to the more positive means by which the spread of smallpox has been favoured, probably the failure to recognise the disease in its mildest forms is entitled to first place. A large number of localised outbreaks have been traced back to such mild unsuspected cases, where persons affected had for weeks been going about in a highly infectious state." (Smallpox Report, 1903.)

It will be noted that in none of these utterances is it suggested that these mild cases, the cause of all the

trouble, were difficult to recognise *just because they had been vaccinated some years before.* Very often the fact of their having been so vaccinated is not even mentioned; but at the time of which we are writing it was major smallpox which had to be dealt with, and in major smallpox mild modified cases such as we are considering were almost unknown except in vaccinated subjects. Sometimes indeed the effect of vaccination in mitigating smallpox in these cases—so detrimental to the community—was actually hailed as a boon, as of course it was from the point of view of the individual. Thus the M.O.H. for Carlisle wrote:

> "In several instances the disease was so little marked as to escape recognition until a late period of convalescence when, as the result of the examination of all the inmates of infected houses, the cases were detected. Such cases were invariably associated with efficient vaccination in the persons in whom they occurred, thus bearing impressive evidence of the power of vaccination in mitigating the severity of smallpox." (Annual Report, 1903.)

Some medical officers did indeed recognise and admit this drawback to vaccination, but they regarded it as an argument for more rather than for less vaccination; and there was a definite movement at that time in favour of making revaccination as well as infant vaccination compulsory. Today of course any question of compulsory revaccination has long since passed; so what we have to consider now is how far this undoubted drawback to vaccination outweighs any advantage it may have in protecting the community. By "vaccination" is implied vaccination of the general population, not the vaccination and revaccination, as often as may be necessary, of a handful of officials who may have to handle smallpox whenever a case may occur.

And here I would give credit to Dr. J. H. C. Dalton for being the first, so far as I know, to draw attention to this aspect of the vaccination question. In 1893 in the *Medical Chronicle*, he wrote:

> "That the community are benefited, however, is a much more doubtful point. It may even be urged that . . . infant vaccination may promote rather than arrest an epidemic. . . . It has often been observed that the origin of an epidemic has been in two or three vaccinated persons who had the disease in such a mild form that it was not recognised until late. Now vaccination undoubtedly causes the disease to be mild; if vaccination had not been systematically performed . . . prompt means of isolation could have been at once taken and possibly the epidemic could have been stamped out. . . . For these reasons I am inclined to doubt whether infant vaccination is such an un-mixed blessing to the community that the State should enforce it with legal penalties."

Of course antivaccinists have repeatedly drawn attention to the frequency with which outbreaks of smallpox have been started by vaccinated persons, but as they have been unwilling to admit the mitigating effect of vaccination, they were unable to make use of what is, as I submit, one of the strongest of all arguments against universal vaccination of the general population.

EXAMPLES

A striking example of the mischief which may be done by an unrecognised case of smallpox occurring in a vaccinated subject was the outbreak in the East End of London in 1911.

Annie Levy, aged 12, *vaccinated in infancy*, living in Stepney, was taken ill with a modified attack of smallpox. She went as an outpatient to the London Hospital where the case was diagnosed as chickenpox and she was sent away with a bottle of medicine. Later she was admitted to the Mile End Poor Law Infirmary and placed in a ward with some 60 women and children. She was seen by the medical superintendent but he too failed to recognise the real nature of the case. The girl was sufficiently ill to be placed on the visiting-list and was visited by her relatives and friends; also a large number of the public visited the ward and were allowed inside on visiting days.

The consequences of this error in diagnosis were about as serious as they could have been. 26 other inmates of the institution contracted the disease and 8 of these died; 5 nurses were attacked and 1 of these died; a scrubber who lived out and 4 of Annie Levy's brothers and sisters were also attacked. In addition there were a large number of cases in persons who had visited the institution. Altogether there were some 70 cases (10 fatal) directly or indirectly traceable to Annie Levy before the outbreak was stamped out. As was said at the time, if we had wanted a prize method for spreading the disease and starting a widespread epidemic we could hardly have devised a better one!

Although there had been a good deal of vaccination default in the East End, the great majority of the cases which occurred in this outbreak were in vaccinated persons. Thus out of the first 54 affected no less than 41 were vaccinated, 3 being in children under five years. Yet the provaccinist press did not hesitate to attribute the outbreak to the neglect of vaccination. Here is a sample of what one influential paper, circulating among the *intelligentsia*, wrote:

> "The feeling has of late been gaining ground in well-informed circles that the anti-vaccination campaign, and the deplorable effect it has had upon legislation, would before long lead to the re-appearance of the hideous disease which vaccination had practically stamped out. . . . For years the Mile End Guardians have been anti-vaccinators, discouraging vaccination in every direction. The result has been that a large unprotected population has grown up and the soil has been only waiting for the seed. The agitation against vaccination is one of the most idiotic things which even our sentimentalists in their record of imbecility have ever carried on."

At the time this was written there had been 25 cases in the outbreak but only 2 of the patients were unvaccinated, one of these being a baby only a month old. It was this sort of travesty of the truth, not at all unusual at the period of which we are writing, which made antivaccinists "see red"; and, looking back, one can hardly be surprised that it did so.

Here are some further examples:

Newhaven, 1912. "This small outbreak of 26 cases originated with a seaman. . . . This man who had come back to England was attacked a week after his arrival by a mild illness with skin eruption for which no medical advice was sought. Eleven out of twelve inmates of the house were attacked by smallpox, and seven other cases occurred in neighbouring dwellings whose infection could be referred to the household primarily affected. Four other cases occurred later in two other households which were probably related, and four other cases in neighbouring districts which could be directly traced. Of these 26 cases five proved fatal, including three unvaccinated children in one household."

Croydon, 1918. "A 'de-mobbed' soldier, W., returned to his home from Macedonia. During his journey home another soldier, supposed to be suffering from chickenpox, was removed from the truck in which W. was travelling. W. was kept in quarantine for two weeks before being allowed to go home. He did not admit to having had any symptoms. But after reaching home he infected his wife and she infected their four children. Five other cases were infected from these."

New Forest R.D., 1921. "The infection was introduced by a seaman who returned to his home from a voyage to the East suffering from a mild and unrecognised attack of smallpox. Of the nine persons in the household all, with the exception of one well-vaccinated child, contracted the malady, and a direct contact was also infected."

In none of these reports is there any reference to the vaccinal condition of the original overlooked case which caused the outbreak; but I think we may safely assume that they had all been vaccinated and quite possibly revaccinated. Revaccination is no guarantee against the occurrence of unrecognised cases.

UNRECOGNISED CASES OF SMALLPOX IN THE UNVACCINATED

It may be argued that unrecognised cases of smallpox may occur in persons who have never been vaccinated; and this is true. Such cases fall into two quite different categories: (1) mild and trifling cases, and (2) very severe cases. The mild and trifling cases very rarely occur when we are dealing with true major smallpox but only when we have to do with a mild strain of the disease, and, when this is so, *the mildness tends to breed true*. Here is an example taken from my own experience in Leicester:

Elizabeth C., aged 18, unvaccinated, was taken ill with a mild attack of discrete smallpox the source of which was never discovered. She consulted a doctor, but he mistook the case for one of chickenpox and no precautions were taken. The result was that she infected all the 9 members of her household, 6 employees at the factory where she worked, and 4 persons outside; also one of her sisters carried the infection to her Sunday school where a teacher and 5 scholars were attacked: 25 persons in all. But *only 1* of the 25 cases proved fatal. How different would have been the result if the mild infecting case, Elizabeth C., had been suffering from a severe strain of smallpox made artificially mild by vaccination!

In the second category of unrecognised cases in unvaccinated subjects, the disease is of a very severe type, and the illness may be mistaken for measles or other zymotic, purpura, or some form of toxæmia. Dr. C. O. Stallybrass in the *Medical Officer*, of July 29 last, mentions for example the *Tuscania* outbreak of 1929, with 35 cases and 11 deaths, in which the unrecognised case was ascribed to "purpura." Of this the Chief Medical Officer to the Ministry of Health, in his annual report for 1929, wrote:

> "These cases presented an entirely different clinical picture from that to which the public has lately been accustomed. They are marked by profound prostration, hæmorrhage into the skin and a confluent eruption. . . . The disease is so severe from the outset that medical aid is at once sought, the patient is confined to bed and thereby the number of contacts is reduced to a minimum . . ."

Dr. Stallybrass thinks that the danger of spread from unrecognised cases in unvaccinated subjects counterbalances my argument as to the danger of spread from unrecognised cases in the vaccinated. I am sorry I cannot agree. But Dr. Stallybrass has had such a great experience in dealing with smallpox that his opinion must necessarily command great respect. I can only leave it therefore for others to decide. I would merely point out that the outbreaks he quotes are very exceptional (he includes one from Canada), that the patients are not ambulant or only ambulant for a very short time, that they are so ill that a doctor must necessarily be called in, and that they have generally been persons recently arrived home from the East. It ought not to be too much to expect of doctors that in such cases resembling measles, purpura, or toxæmia, with the patient seriously ill, they should bear in mind the possibility of malignant smallpox.

Incidentally I am all in favour of every one who visits the East being efficiently protected by recent vaccination, just as I am in favour of their being inoculated against other Oriental diseases; but I do not think it necessary that we at home should all be inoculated against those diseases.

WHAT TYPE OF CASE IS MOST INFECTIOUS

It is often supposed that a severe case, seriously ill, with a profuse eruption fully developed, must give off more "infectious material" than a slight trivial case, hardly ill at all, and with only a very sparse eruption. I am not aware, however, that there is any very definite evidence to support this view. The fact is we have little knowledge of the conditions under which infection is given off from one individual or is transmitted to another. Often when we expect the disease to spread it does not do so, and vice versa. We are quite in the dark as to why this should be. Let me give one of several examples from my own experience where much greater spread might have been expected.

R. W., a tailor by trade, tramped from London and took lodgings in Leicester. He was taken ill the day after his arrival. Three days later the eruption appeared and he then went as an outpatient to the Royal Infirmary sitting in the waiting-room amongst a number of other patients. Unfortunately the nature of his illness was not recognised. The same afternoon he visited one of the most frequented drinking bars in the town. The following day (Sunday) he stayed in all day but the next day he again visited a public-house. The man was now so ill and the eruption so obvious that the publican's suspicions were aroused and he sent word to the Health Office. Meanwhile, however, the occupier of the house where he was lodging had also become suspicious and called in a doctor who at once reported the case and he was then removed to hospital. The attack proved to be a very severe one, of the hæmorrhagic type, which proved fatal three days after admission. Here again we naturally expected that further cases would arise, but not a single further case resulted.

As a contrast let us consider the comparatively recent outbreak of virulent smallpox at Glasgow. Here, an Asian seaman, Moosa Ali, "well vaccinated," recently arrived in this country from the Far East, developed an attack of smallpox. As the event proved it was major smallpox, but so mild and modified by his previous "good" vaccination that the experts decided, after careful consideration, that it was chickenpox and no proper precautions were taken. The result was most disastrous. During the short time he was in hospital he infected no less than 18 other persons in, or in connection with, the institution, and 6 of these died. This case, in spite of being clinically so slight, must indeed have been highly infectious.

THE ROYAL COMMISSION ON VACCINATION

The most authoritative and exhaustive inquiry ever made into vaccination was the Royal Commission; and by the very first term of their reference it was instructed to inquire and report as to (1) "the effect of vaccination in reducing the prevalence of and mortality from smallpox,"—in other words, the effect of vaccination in protecting the community. Yet after seven years' deliberation the commissioners never answered this question at all. What they did was to express their opinion as to the effect of vaccination *upon the individual*: nothing whatever is said as to its effect upon the community—i.e., in reducing the prevalence of and mortality from smallpox. In view of all the claims, so often and so confidently made, as to the great reduction in smallpox prevalence and mortality which vaccination was supposed to have effected since its introduction at the beginning of the 19th century, this omission is certainly most surprising.

The fact is of course that it is in its effect in protecting the community that the case for vaccination is weakest; and it is here that the antivaccinists have, in my opinion, much the best of the argument and have scored their strongest points. As regards the effect upon the individual the provaccinist case is almost impregnable—except that the duration and extent of the protection conferred has been greatly overestimated—and it is because the antivaccinists refuse to recognise the effect of vaccination upon the individual that they have failed to make any real progress in winning over scientific opinion.

THE LATEST ARGUMENT FOR INFANT VACCINATION

Some medical officers of health are now advocating universal vaccination in infancy on the ground that

there is apparently less risk of postvaccinal encephalitis if primary vaccination is done early in life. As many people have to be vaccinated sooner or later—e.g., when going out to the East or if they join the Services—it is better (for the individual) to have this done in infancy. There may be something in this argument; indeed, it is perhaps the strongest that can be used today, though if it were frankly put before parents its propaganda value would be doubtful. But what a different argument from that originally used—namely, that unvaccinated persons were a danger to the community!

MAY INFANT VACCINATION INCREASE THE VIRULENCE OF THE "STRAIN" OF SMALLPOX?

Antivaccinists have frequently pointed out that in the official statistics of a smallpox epidemic the case-mortality in the unvaccinated group—which is nearly always much higher than in the vaccinated group—is greater (say, 15–30%) than was the estimated case-mortality in prevaccination times (say, 5–15%) when all were unvaccinated. I am inclined to agree with them in this, though I do not agree when they go on to contend that this is evidence that the official statistics of smallpox epidemics are not to be trusted. I think that there is a possible alternative explanation—namely, that infant vaccination may tend to increase the severity of the "strain" of the disease.

What has been said above indicates how this might come about. We have seen that smallpox is chiefly spread by clinically trivial ambulant cases rather than by severe bedridden cases; also that mild cases in unvaccinated subjects tend to transmit their mildness (to "breed true") and therefore spread a mild strain of the disease, whereas mild cases in vaccinated subjects—where the mildness is merely due to the fact that they have been previously vaccinated—often transmit a highly virulent strain. Assuming that this tendency is always at work, it is easy to understand how the "strain" of the disease might in the course of time become permanently more virulent than would have been the case in an unvaccinated population. Persons protected by vaccination would still get the disease in a much milder and less fatal form, but those who were unvaccinated, and also those whose vaccination had lapsed, would get it in a more severe form; so the net result might well be that the total mortality was just as great as, or even greater than, if there had been no vaccination. It would all depend upon the relative proportion of the two classes in the population how it would work out. If there were a large proportion of unvaccinated, or of those vaccinated who were no longer protected, the mortality might actually be higher. This may possibly explain why it is very uncertain just what effect vaccination has had in reducing the mortality from smallpox—i.e., its effect upon the community.

The belief, so long and so firmly held, that the great reduction in smallpox mortality which followed the discovery of vaccination was due to vaccination is no longer tenable, seeing that the fall began before the introduction of vaccination and has continued steadily in spite of vaccination having largely fallen into disuse. Moreover it is paralleled by a similar fall in the mortality from several other zymotics.

THE CASE OF INDIA

One hesitates to refer to India, without having personal experience of that country and its problems. But it is common knowledge that the toll of human life taken by smallpox in India (tens of thousands of deaths annually) continues to be appalling in spite of all efforts to combat it by vaccination, a vast amount of which is carried out. The immediate cause of this great mortality is the intense virulence of the disease, which is such that only very recent vaccination will stand up against it. (British troops in India had to be revaccinated every two years, which of course would be quite impracticable for the general population.) One may try to explain this exceptional virulence as due to climatic conditions, the habits of the population, or neglect of hygiene, but it is hard to believe that the virulence could have been as intense in prevaccination times, or the people would have been wiped out. The suspicion therefore rises, and should be faced, that in India, as in this country, though vaccination saves many individual lives, it may have actually made things worse for the community by intensifying the severity of the disease.

I am not suggesting that India should now abandon the use of vaccination. But I do think that it might be worth trying the experiment of introducing, on a sufficiently large scale, a very mild form of smallpox such as variola minor (alastrim) from the Western Hemisphere. This could do no harm, and if it could be persuaded to "catch on" it might transform the entire situation. More wonderful things have been successfully accomplished in the field of botany and agriculture. The difficulty would be getting it to "catch on," but this might be done if inoculation with variola minor took the place of inoculation with vaccinia (vaccination). The experiment might be made in the first place in one town or district. The present position is so serious that much more heroic measures than this would be justified.

SUMMARY

The effect of vaccination upon the community must be distinguished from its effect upon the individual. By masking the disease and making it more difficult to recognise, it may actually promote the spread of smallpox.

Infant vaccination may conceivably have intensified the virulence of the "strain" of smallpox, both in this country and in India. The mortality from smallpox in India might possibly be reduced by deliberately introducing a milder strain of the disease.

Influenza

The statistics for England and Wales and the Great Towns do not indicate any serious epidemic of influenza up to the end of last year. Any increases in pneumonia cases and deaths and in influenza deaths are not much more than normal for the time of year.

A mild form of influenza, but of a very infectious type, has been epidemic in the North-east of the country including Newcastle upon Tyne, in parts of Lancashire including Liverpool, and in Birkenhead (Cheshire). The evidence is, however, that in these districts the epidemic has passed its peak and is on the downgrade. Serological investigations have now shown that the epidemic in Tyneside is due to virus A, and it may well be that it is identical with that which has been the cause of the Scandinavian outbreaks—virus A prime. The results of further laboratory investigations are awaited.

There is at present no evidence of spread of the epidemic to the Midlands and South. There are, however, in many areas localised outbreaks of a mild disease with symptoms not unlike those of influenza, which has not so far been shown to be due to an influenza virus. There is similarly no evidence of spread of the epidemic from the North to London.

In the absence of notification of influenza the incidence of pneumonia cases and of deaths from pneumonia and influenza is used as a guide to the prevalence of the disease. The following figures relate to the great towns of England and Wales:

	Pneumonia (including primary and influenzal)		*Influenza*
Week ended Dec.	*Cases*	*Deaths*	*deaths*
16	374	289	33
23	364	351	54
30	502	383	102

In England and Wales notifications of pneumonia numbered 686 in the week ended Dec. 16, 648 in the week ended Dec. 23, and 962 in the week ended Dec. 30.

Smallpox at Brighton

Up to noon on Jan. 9 there have been 17 patients believed to be suffering from smallpox in Brighton county borough, or in the immediate vicinity. Of these, 2 have died and the diagnosis is still in question in 3. During the past week, the infection has been confined to the two original foci—the laundry to which the clothing of the initial case, an R.A.F. officer, was sent, and the hospital in which the second case was missed for ten days.

Among the laundry employees there have been 6 cases: 2 worked at a receiving branch and the remainder in the main establishment. The laundry is now out of production. The hospital is in quarantine, and of its personnel 5 nurses and 1 domestic have been admitted to the smallpox hospital. All these were employed on the ward to which the second case was admitted and nursed in a cubicle.

The vaccinal state of the nursing and domestic staff at the infectious disease hospital was unsatisfactory; 27 out of 113 had never been vaccinated. Among the nurses and domestics attached to the ward concerned 7 were unvaccinated. Of these 3 had little contact with the patient, and did not get the disease; of the other 4, who had intimate contact, 1 died and 3 are in a serious condition. The remaining 2 nurses now in the smallpox hospital have a good vaccinal history and there is still some doubt as to the diagnosis.

Poliomyelitis

Poliomyelitis notifications in the last week of the year were paralytic 36 (38), non-paralytic 17 (15), total 53 (53). The figures for the previous week are in parentheses and the total number of notifications was the same in each week. Total uncorrected notifications for 1950 are 8698 compared with 9195 in 1947, 2379 in 1948, and 6857 in 1949. The incidence of poliomyelitis in 1950 after correction of notifications is hardly likely to be much less than that in 1947, when it was $4^1/_2$ times greater than in any previous year since compulsory notifications began in 1912.

The Third Quarter in Scotland

In Scotland [1] during the third quarter of 1950 the death-rate from all forms of tuberculosis was 43 per 100,000, and the death-rate from respiratory tuberculosis 37 per 100,000. These rates are 16 and 14 below those for the corresponding quarter of 1949; and they are 22 and 17 below the five years' average.

In the third quarter the infant-mortality rate—33 per 1000 registered live births—was the lowest recorded in Scotland for any quarter.

1. Quarterly Return of the Registrar-General, Scotland: births, deaths, and marriages registered in the quarter ended Sept. 30, 1950. H.M. Stationery Office. Pp. 36. 1s.

Infectious Diseases in England and Wales

Disease	Week ended Dec.				
	2	9	16	23	30*
Diphtheria	45	49	50	46	41
Dysentery	856	934	1242	1024	691
Encephalitis:					
Infective	—	2	3	4	4
Postinfective	—	—	3	2	3
Food-poisoning	203	108	98	169	147
Measles, excluding rubella	12,323	14,076	14,290	14,392	17,468
Meningococcal infection	32	33	29	31	34
Ophthalmia neonatorum	33	34	23	37	21
Paratyphoid fever	8	2	5	3	6
Pneumonia, primary or influenzal	497	574	686	648	962
Poliomyelitis:					
Paralytic	90	73	82	38	36
Non-paralytic	38	31	26	15	17
Puerperal pyrexia and fever	94	89	66	74	38
Scarlet fever	1435	1266	1356	1111	1026
Smallpox	—	—	—	—	4
Typhoid fever	1	6	2	5	—
Whooping-cough	4458	4444	4523	3735	3690

* Not including late returns.

In England Now

A Running Commentary by Peripatetic Correspondents

WHEN my friend Tom was in the Army they discovered he had a chronic illness that would make it difficult for him to practise medicine. He could not contemplate the strains and irregular hours of a G.P.'s work, so he joined the staff of an L.C.C. mental hospital. He is a competent doctor and a very kindly man, and he soon settled down to the undramatic and rather thankless task of making life a little less unpleasant for chronic psychotics. He took the D.P.M., bought a house near the hospital, and moved in with his several young children. In 1948 they told him that he was to become a trainee specialist instead of an assistant medical officer. "Don't want to be any more of a specialist than I am now," grumbled Tom. When he was metamorphosed into a registrar he merely shrugged his shoulders. Now they tell him that he must leave in the summer. "Why?" asks Tom, truculently. "Because you can't become a consultant," says the R.H.B. "Don't want to be a consultant," growls Tom; "never did." "Good!" says the R.H.B., "you are one of the lucky ones. You can go to the Colonies with a good grace."

Tom is a bit of a Tory and I had had a hard job persuading him that the N.H.S. was a good idea. Now I can't look him in the eye at all.

* * *

It is a dangerous habit, this skimming through the Tables of Contents of the journals or glancing at the titles of the articles, and then laying them aside as read. The other week, for instance, I was idly turning the pages of THE LANCET when the words "Milkman's Syndrome" caught my eye. Underneath the title was this quotation: "At times the bowel complaint is overlooked: the wasting, weakness, paleness are what is noticed, and are thought to be due to another than the true cause." Hmm, I thought, curiously enough our milkman *is* wasted, weak, and pale. For all I know he may well have "the bowel complaint," but as long as it's not typhoid. . . . My thoughts rambled on. . . . No wonder the poor fellows get wasted, weak, and pale, having to be out and about at some ghastly hour on these cold mornings. I wondered whether the syndrome had a psychiatric component. Our milkman certainly seems manic-depressive—manic when asking for his money and depressed when he doesn't get it. But what's this? Ye gods! Further down milkman has a capital M. And his syndrome turns out to be "Multiple Spontaneous Idiopathic Symmetrical Pseudofractures." Curse these eponymous titles! But I suppose the author couldn't very well call his paper "Multiple Spontaneous Idiopathic Symmetrical Pseudofractures in Idiopathic Steatorrhœa Complicated by Refractory Macrocytic Anæmia"—he might have brought the compositors out on strike again.

* * *

Even a smallpox scare—or should I say a vaccination epidemic?—has its lighter side. Vaccinating contacts on New Year's Eve we found their main fear, apart from anxiety lest they spread the disease, was centred round the cocktail cabinet: "This doesn't stop us drinking does it, Doc.?" Small boys thrilled at the prospect of no baths, and some mothers, very much under their influence, began to think the whole thing a plot to save fuel.

How different were these jolly folk from the panicky public who, for four days, rang our telephone bell on an average every seven minutes with urgent messages for the doctor to: "Come and vaccinate me at once. My cousin shook hands with the uncle of an ambulance man," or "I've not been out of the house for the past three months so must be specially liable to infection." Many patients refused to attend clinic or surgery on the grounds that they might catch the disease while awaiting vaccination. It is difficult to keep one's temper from 8 A.M. until 10 P.M., particularly with such patients as the woman who looked round our spotless waiting-room and said: "When I come to have my ears syringed I don't expect to be exposed to contacts." To the best of my knowledge there was no contact in the place. My

halo slipped half-circle and I told her there was nothing between her and the front door. She did not take the hint, but, sunk in sables, brooded in a corner while the other patients did their best to give her the creeps.

On reflection, I suppose we should be grateful to the cringing souls who preferred a guinea's worth of lymph in their own homes to State benefit in clinic and surgery; but what a pest they are in emergency.

Our hopes that people would stop calling the doctor to their homes for colds because we might infect them with smallpox were short-lived. The telephone engineers scored instead. One who gave new life to our jaded phone told us that he had been refused entry because it was known that postal authorities had had some contact. One facetious patient, looking round our five-bob-a-nob clinic, remarked: "You'll be able to retire after this." Somewhat bitterly we replied: "No doubt—to the nearest asylum."

As wife and general factotum, my saddest moment came when my husband returned from vaccinating the Golden Goose in the local pantomime. He was empty-handed. Even an ordinary egg would have been welcomed.

I must leave you now and take our temperatures. My husband is looking for a rose petal under the mattress. I've a nasty feeling that the M.O.H. will have to be informed.

* * *

It was my first morning as a teacher of practical anæsthetics at this Scandinavian hospital, so my ignorance of the operating-theatre lay-out was excusable. I arrived at 7 A.M. and I had been told that operating usually went on until 2 in the afternoon. I undressed in a bare room resembling the steam room of a turkish bath on closing day, and put on the usual shapeless trousers, topped by a rather bedraggled collarless limp coat—gowns, it seemed, were not worn by porters, visitors, or anæsthetists. Clogs were provided as footwear and I soon discovered why. The theatre floors were kept continually covered with a half-inch layer of acrid ammoniacal disinfectant solution in which everybody sloshed about. As the morning wore on, the three or four cups of coffee I had drunk before dressing at the unholy hour of 6 A.M. began to take effect, and the time came when, with an intravesical pressure well-nigh unbearable, I had to teeter out of the theatre on my clogs to seek relief. By now my feet felt like a Chinese maiden's, and the clogs seemed to have increased enormously in weight. I stumbled along the corridor trying various doors, but none was the one I wanted. Oddly enough, though everybody in the town seemed to speak and understand English well when one asked the way or wanted a tram ticket, here I found it was impossible to make myself understood. I tried every variety of accent on the words that I felt sure must be of international significance, but "toilette" and "lavatoire" produced no signs of comprehension in the nurses I accosted. At last my efforts were rewarded—by a cleaner who it later appeared had scrubbed for a time in Britain. Arriving with my last gasp at the door she had indicated I was about to enter when a grim secretarial lady came across the corridor and told me in clear and authoritative English: "You cannot go in there; *that* is the Professor's lavatory!" Needless to say I committed the unforgivable and entered the unenterable. I do not know whether the Professor heard about this lapse or my subsequent ones, but it may be significant that throughout the week I stayed at his hospital he never once said "Good morning."

* * *

Despite the ice-bound roads our bank manager rode the six miles to and fro between his home and the bank every day on his autocycle. He is a large man who spends a goodly part of each day in the local. One afternoon he set off home clutching a bottle of brandy, skidded, and fell, damaging the bike and dislocating his shoulder, but caring for none of it because he had saved the brandy. He was not seriously perturbed by an uncomfortable night, the 15-mile journey to hospital for X ray, or having his shoulder reduced. But he returned home ready for the solace of his hard-earned bottle. Alas, his wife had knocked it off the kitchen table.

Letters to the Editor

TREATMENT OF PERFORATED PEPTIC ULCER

SIR,—I should like to reply to some of the points raised in your leading article of Jan. 6. As you say, when assessing the results of a non-operative régime it must be remembered that in a proportion of the cases proof of perforation is lacking. In the series reported from King George Hospital, Ilford, however, there is some circumstantial evidence that the figures have not been significantly "padded" by the inadvertent inclusion of cases other than perforations. Of the 73 cases that Mr. Hermon Taylor reports, 68 were examined radiographically and 65·4% showed subphrenic gas. This corresponds with the experience of McElhinney and Zinniger,[1] who found subphrenic gas radiographically in 65% of 122 patients in whom the diagnosis of perforation was proved at operation. Of the remaining 5 patients in the King George Hospital series, 4 had the diagnosis established at operation.

No strict controls are available for the King George Hospital cases, but they may be compared with records on the same basis from Guy's Hospital and the London Hospital. The results are remarkably similar:

	Guy's 1946–49	*London 1946–49*	*King George 1946–50*
No. of patients	75	75	73
Perforations sutured	69	65	6
Treated by aspiration only	4	7	65
Total deaths	7	10	7

Surely neither Mr. Hermon Taylor nor Mr. Stead suggests that gastric aspiration should be considered a rival treatment to operation. Rather does their work help towards a better understanding of the therapeutic value and dangers associated with these two measures. The conception of "the single final stopping of the leak which only operation can secure," and reliance on operative "closure" alone without efficient gastric decompression, still lead to tragedies from persistent leakage. As Roscoe Graham [2] pointed out in his classic paper: fibrin and fibrosis produce the real closure; operation can only provide the scaffolding. Baritell,[3] reporting a series of 88 operations with 1 death, stressed the importance of gastric suction and stated that "watertight closure is entirely unnecessary." McElhinney and Zinniger [1] report 128 cases with 8 deaths and they also emphasise the importance of combining gastric suction with operation.

Reports of this type, taken together with the results obtained when operation is omitted, may incline opinion to the view that operation is an important accessory in treatment, to be used for increasing the safety factor after this has been balanced against the added risks.

Wallington, Surrey. JOHN F. R. BENTLEY.

CORONARY DISEASE AND MODERN STRESS

SIR,—As Professor Platt points out, the evidence for an especially high incidence of coronary thrombosis among the medical profession is rather shaky; but even if such a preponderance were conceded, the jump from this fact to the conclusion that special psychological stresses play an ætiological rôle is so far as to make it of interest to examine the reasons for this prevalent notion.

The play of human emotions is often associated with certain precordial sensations which, for the sake of brevity, we might refer to as pangs. Pangs have been a powerful influence in shaping the lay concepts of psychology throughout the ages, concepts which have become enshrined in all languages in expressions such as heartless, disheartened, and heartbreaking. Pangs have also had their influence upon medicine. Thought

1. McElhinney, W. T., Zinniger, M. M. *Arch. Surg.* 1950, **61**, 758.
2. Graham, R. R. *Surg. Gynec. Obstet.* 1937, **64**, 235.
3. Baritell, A. La M. *Surgery*, 1947, **21**, 25.

processes being rarely devoid of emotional content, the heart was at one time thought to be the main sensorium, and the brain was relegated to the rôle of a cooling sponge. Again, in more recent times, we have learned to recognise a neurotic condition based on the misinterpretation of these thoracic sensations—the effort syndrome. The "modern stress" theory of coronary disease seems to be founded on the same naïve conjectures, having not a shred of factual evidence to support it. We seem to be dealing here with a sublimated form of Da Costa's syndrome: medical theorists, too well informed to be able to convert the pangs into a private heart-disease for themselves, are driven to make them into an ætiological hypothesis.

Dr. Macdonald Stewart's article bears signs suggestive of this. Having ably shown the fallacies of the "modern stress" theory in the first part of his essay, he yet cannot avoid plumping into the pitfall he himself has so well demarcated. The way in which he outlines the superior moral attitude proper to the prospective victim of coronary thrombosis and contrasts it with the low mentality of the "resentful and idle" majority suggests a hidden personal concern.

In the time of our forefathers, gout was reputed to be the doctors' disease; but being less hypocritical than our age they frankly attributed it to excessive tippling and not to superior mentality, although Sydenham could not forbear consoling himself with the observation that more wise men died of it than fools.

Admittedly the question of coronary reactions to emotional stress and their possible chronic effects is both a legitimate and important one, but the only hopeful approach to it is by the methods of the physiological laboratory and not by pseudo-psychological speculation.

Gerontological Research Unit, University of Edinburgh. ERICH GEIRINGER.

SOURCE OF DEOXYRIBONUCLEOPROTEIN FIBRILS IN PURULENT EXUDATES

SIR,—I was interested in the article of Dec. 9 by Dr. Armstrong and Dr. White, and in your leading article of Dec. 16. The liquefaction of viscous purulent exudates by deoxyribonuclease, streptokinase, and other enzymes looks as if it may become a valuable therapeutic procedure. It may prove important to understand clearly the cytological changes which lead to the production of fibres of nucleic acid in such material.

The tough viscous web in sputum and other purulent material usually follows a complex series of changes in the eosinophil or neutrophil leucocytes. Responding to certain stimuli these cells eject long processes—filopodia—which may travel for as much as 200 μ in a single direction or in several different directions simultaneously. They are tipped by one or more of the refractile cytoplasmic granules and are at first extremely slender and difficult to find in the unstained specimen. In the earlier stages they may be withdrawn into the cell, but more often they reach their objective and the contents of the leucocyte are, as it were, poured down them, the nucleus participating in the activity and becoming filiform. The cell becomes converted into a simple or branched thread.

By this means neutrophils and eosinophils traverse considerable distances and, becoming attached to their objective, often draw themselves up to it so that they adhere closely to or surround the object. Epithelial cells and dead or moribund leucocytes seem to stimulate this activity very strongly, whereas red cells appear to exert no positive tropism. When the filopodium abuts upon any object it tends to run round it, probably led to do so by the surface pressures, for leucocytes can be seen in this way to embrace with equal facility an epithelial cell or an air bubble; and in preparations stained with Romanowsky stains epithelial cells may often be seen with blue cytoplasm and purple nucleus, and round them, like a tyre round a wheel, is applied the filiform nucleus of a leucocyte stained deeply purple.

In some types of purulent material this filopodial activity of the leucocytes is responsible for arranging the familiar spherical leucocytes into long ranks lying between the filiform extensions of the more active cells. If the material is not too thickly filled with cells, these ranks will ultimately be rolled up into a clump by the filopodia and undergo fairly rapid cytolysis.

This is a brief and incomplete account of a few only of the activities of pus cells, but it will be realised that in such exudates the cells conforming to the classical description of leucocytes are often dead or moribund, whereas the living cells in a state of high activity are rendered unlike the classical description because of their filopodial changes. In the article by Armstrong and White, for example, the figure "*b*" in each of the three series of photographs probably shows a preponderance of dead cells.

The ejection of filopodia and some other activities of leucocytes have escaped the attention which they merit, and one hopes that this new therapeutic procedure will stimulate more interest in them. In unstained material the activities are seen more readily in the eosinophil because of the higher refringence of its cytoplasm than in the neutrophil.

The accompanying photographs show examples of the filopodial activity described above.

Cirencester. R. E. HOPE SIMPSON.

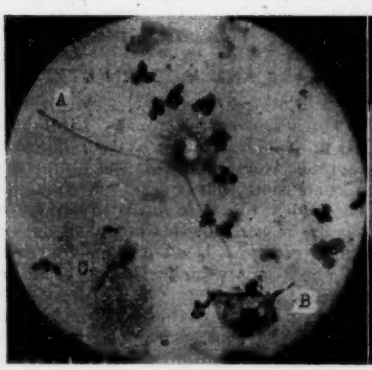


Fig. 1

Fig. 1—Film from purulent urine stained with Leishman stain. Polynuclear neutrophils are mostly dead or moribund. A, point of departure of neutrophil by filopodial change to reach epithelial cell B. Nucleus of another neutrophil can be seen re-forming round B, and another round epithelial cell C.

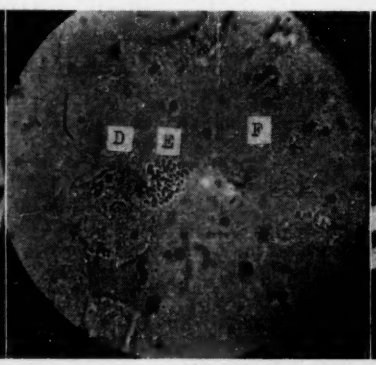


Fig. 2

Fig. 2—Unstained sputum: eosinophil E has reached shed epithelial cell D down filopodial pathway F.

Fig. 3

Fig. 3—Sputum stained with Leishman stain, showing dead and moribund neutrophils gathered into long ranks.

WELFARE OF THE BLIND

SIR,—May we draw attention to the course that newly blinded people should follow if they wish to take full advantage of the blind welfare services?

If a person's loss of sight has been caused or aggravated by war service (including civil defence), he or she should get in touch with St. Dunstan's, 191, Marylebone Road, London, N.W.1, which is responsible for such cases.

Responsibility for all those whose loss of sight is not attributable to war service—that is, the civilian blind—is borne by the local authorities and the local voluntary agencies for the blind, in coöperation with the National Institute for the Blind. Newly blinded civilians should therefore get in touch with the local blind welfare authority or, should there be any doubt as to the identity of that body, with the National Institute for the Blind, 224, Great Portland Street, London, W.1, which gladly provides applicants with any information or advice they may require.

W. ASKEW
Secretary, St. Dunstan's.

J. C. COLLIGAN
Secretary-General,
National Institute for the Blind.

STUDY OF DELINQUENCY

SIR,—There are few greater attractions to the spectator than a good quarrel; and if Dr. Bodman, Dr. Edelston, and myself have only succeeded in bruising each other, we must at least have endeared ourselves, for the entertainment we have afforded, to your readers. For when specialists in emotional health come to blows, who can help shouting: "A ring, a ring!"

After honourable war, honourable peace! Peace treaties are, I know, not much in fashion nowadays; but who should be better able to resolve conflicts than the present protagonists? And so it occurred to me to draft a treaty, by clauses, to place on record the highest common factor of agreement.

This pacific overture is made, however, in the hope that Dr. Edelston will not misconstrue it as battle-weariness; it was really very ungenerous of him to take advantage of my chivalrous admission of the leading part that psychiatrists had played in the development of the new personality-psychology. (A bad beginning that, to peace negotiations. I must make some other overture.)

Dr. Edelston bids me direct my guns upon my fellow psychologists. Yes, there is much I could criticise in our own academic training, but actually there is no need. More eminent psychologists than I are doing this already. "Too many professional psychologists," writes Professor Vernon,[1] "in this country as well as in America, become too exclusively rat experts, or statisticians, or gadgeteers." How's that for blowing our own brains out?

With that preamble of recrimination and appeasement I proceed now to the clauses of our treaty, as follows:

1. All those constantly in touch with children and families—teachers, general practitioners, school medical officers and nurses, welfare and probation officers—should be encouraged to detect maladjustment or unadjustment at its earliest stage (in so far as they are not doing so already).

2. The overcoming of the present tendency among such towards extreme pro- or anti- psychological-psychiatric bias, regarding us alternatively as witch-doctors or nitwits; and a clearer understanding of the bearing of emotional health upon physical health, education, and good behaviour.

3. A thoroughgoing, yet realistic, training for clinicians of all types—to embrace whatever is relevant in our present medical and psychological teaching.

4. Our conception of treatment to be widened to include as much as possible of the patient's life-situation; and especially to do our best to see that every young person is firmly anchored in a family "belonging-group," at best with his own parents, but otherwise with permanent parent-substitutes. (Not always easy, I confess again.)

5. That in every case of delinquent breakdown, someone or other should be continuously responsible for the process of rehabilitation, using whatever treatment, clinical or otherwise, is appropriate. The position of a specialist who, with inadequate time and resources, has to give an opinion on a case which forthwith passes out of his hands can be a false one (*vide* Dr. Peter Scott's letter of Dec. 30.)

Redhill, Surrey. D. H. STOTT.

1. *Brit. J. educat. Psychol.* November, 1950.

MEDICAL SCHEME FOR BOYS' CLUBS

SIR,—May I through your columns issue an appeal? The London Federation of Boys' Clubs is about to launch a medical scheme by which regular routine medical inspection is to be offered to club members. It has been found that much good comes of these examinations. For this scheme to work we need doctors who will take part voluntarily in the club life for a minimum of about two hours in an evening every three weeks. There are many other ways in which such doctors can help the many clubs in London; and these, together with details of the scheme, are outlined in a booklet which will be sent to any doctor asking for one. Younger doctors on the house-staffs of London hospitals are just as welcome as practitioners living near a particular club.

It is hoped to issue a standard card for recording the results of medical inspections, and it is felt that in time these might be of great medical and statistical value. The scheme is to be in no sense a "sick parade," but a series of routine medical inspections; and the boys' own doctors under the N.H.S. are never to be "by-passed" or made redundant. No-one expects these busy practitioners to carry out routine inspections on apparently healthy adolescents; and when any lesion is detected they will always be approached.

FRANK FALKNER
Hon. medical adviser,
London Federation of Boys' Clubs.

222, Blackfriars Road,
London, S.E.1.

MASS RADIOGRAPHY

SIR,—Your leading article of Dec. 9 and the divers views expressed in the ensuing correspondence show that this is not the time for regional boards, or anyone else, to make a final decision about either the scope of mass radiography or the medical direction of this new diagnostic weapon.

When mass radiography was first made available for civilians, it was said that eventually every man, woman, and child in Britain could be X-rayed. Dr. James Brailsford was the first to show that this was impracticable. Since the whole population cannot be X-rayed, it is obvious that mass radiography should be reserved for those groups whose survey is most likely to benefit the community. Therefore, the primary aim of mass radiography should be the detection of unsuspected cases of pulmonary tuberculosis not only in the most vulnerable age and occupational groups of the population, but also among those who, by reason of their calling, are most likely to disseminate widespread infection. Mass radiography is thus related both to clinical and to preventive medicine. For example, to discover one case of open pulmonary tuberculosis in a school-teacher it would be worth while to survey many thousands, because the removal of that source of infection would eventually save the State many thousands of pounds. There would also be a saving in suffering and sorrow which cannot be assessed in terms of ducats.

From the groups enumerated in your leading article, I would exclude "prospective employees whose employers wish them to be examined." Mass radiography is part of the National Health Service, and the Terms and Conditions of Service of Hospital Medical and Dental Staff (England and Wales), issued by the Ministry of Health

on June 7, 1949, excludes from work within the scope of the National Health Service "examinations and reports required by employers (including Government Departments and local authorities) on employees or prospective employees."

The average cost of finding a new case of pulmonary tuberculosis is greatly reduced when "doctors' cases," where the incidence of tuberculosis is highest, are included in the routine work of a mass-radiography unit. By including these cases, the unit is not competing with the tuberculosis dispensaries. Every doctor is advised that all suspected cases of pulmonary tuberculosis should be referred direct to the tuberculosis officer, but he is also told that mass radiography is available for those cases in which he wishes to exclude the possibility of tuberculosis before making a diagnosis. Thus a diagnosis of gastric ulcer may be right nine times out of ten, but the tenth case may be acid dyspepsia associated with pulmonary tuberculosis. Those of us who have established a mass-radiography service for general practitioners have been amazed by the response. General practitioners say that it is easier to induce their patients to attend a mass-radiography unit than a tuberculosis dispensary or chest clinic with the stigma of tuberculosis. Nevertheless, when a firm diagnosis of tuberculosis has been made by a mass-radiography unit, there is little difficulty in inducing these patients to attend the tuberculosis dispensary in order that they may receive appropriate treatment. This assumes that the mass-radiography unit is fully diagnostic to the limits of its capacity. Within the scope of mass radiography are all serious chest diseases, and in "doctors' cases" a relatively large number of neoplasms will be discovered in the operable stage.

The value of surveying school leavers is now generally recognised, but our target should be an annual survey of all males and females between the age of 15 and 25. On the other hand, it is most difficult to induce adolescents, other than those in factories, to be surveyed after they have left school. In Birmingham we attempted to arrange an annual survey through youth organisations, but the results were not impressive.

Dr. Hoffstaedt, in his article of Dec. 9, has shown that mass radiography may be a most expensive diagnostic weapon. Before it is abandoned or curtailed on that account, the cost of equipment and of film might be referred to the commission now concerned with monopolies and restrictive practices in industry. It is certainly the duty of medical directors to scrutinise all accounts and to eliminate all unnecessary expenses. Dr. Evans and Dr. Posner (Dec. 23) say:

> "If it were wished to really cheapen this service, the following action would be necessary:
>
> The service would have to be regarded purely as a sieve for pulmonary tuberculosis, taking miniature films and repeat films of 4 × 5 in. size. The staff could then be reduced to: radiographer, assistant radiographer, dark-room technician, and two clerks; clerical work would be cut down to an irreducible minimum and all cases immediately referred to a chest clinic. The post of medical director would be abandoned, and a consultant chest physician would attend for two or three half-sessions per week to read the miniature and large films. All surveys would be arranged by a secretary under the direction of the consultant chest physician."

In reply to this suggestion, I submit that there would be no real saving but possibly an increase in expenditure. If the number of clerks in a mass-radiography unit was reduced from 6 to 2, the redundant 4 clerks would be required to do precisely the same work at a chest clinic. If the post of medical director were abolished, his work would have to be done by an equally well-qualified and well-paid chest physician, the only difference being that films would be read at the mass-radiography unit and clinical work would be done at the chest clinic. If all surveys were arranged by a secretary under the direction of the chest physician, this secretary would require special qualifications to enable him: (*a*) to address meetings of up to 2000 employees at a factory; (*b*) to confer with joint production committees; (*c*) to meet industrialists, and (*d*) to compose the printed propaganda for his unit. In most units all these duties have hitherto been performed by the medical director. An adequate substitute would require an adequate salary. Moreover, it is very doubtful if any layman could supervise and control the work of professional radiographers, or whether the latter would willingly agree to this.

There are two claimants for the medical direction of mass radiography. The majority of tuberculosis officers would like mass-radiography units, as an integral part of the *tuberculosis* service, to be attached to tuberculosis dispensaries or to chest clinics. The majority of medical directors would like these units to be an interdependent integral part of the *chest* service, and as such to work in close coöperation with tuberculosis dispensaries, chest clinics, thoracic units, general hospitals, school medical officers, M.O.H.s, and, above all, general practitioners. Some inexperienced persons have suggested that the work of a mass-radiography unit is so uninteresting that no-one would want to be its medical director for more than a year. Having had experience of all kinds of tuberculosis institutions from an open-air school to a home for advanced cases, I can testify that in none of these is the work more interesting or more varied than that of a mass-radiography unit, provided the latter is diagnostic to the limits of its capacity.

HALLIDAY SUTHERLAND
Medical director, Birmingham Mass Radiography Unit, and chairman of the Standing Committee of Medical Directors of Mass Radiography Units in England and Wales.

TYPHOID FEVER IN A GENERAL HOSPITAL

SIR,—Dr. Dewar (Dec. 30) will doubtless be completely satisfied with my explanation that the case of subacute bacterial endocarditis, reported by Dr. Curtin in your issue of Dec. 16, was admitted to Sheriff Hill Infectious Diseases Hospital for investigation of suspected acute tuberculosis of the lungs in late pregnancy.

It is necessary, however, to stress the vast difference between the treatment of a typhoid case in a general hospital, with the attendant risk of infection of the nursing staff and the other patients, and the care of a non-infectious condition in an isolation hospital, where the patient can be segregated in a side-ward or cubicle and efficiently safeguarded from the other infectious patients.

A subordinate motive for my original letter of criticism was concerned with the long waiting-lists for admission to the general medical wards. This factor makes it still less desirable that a patient with a notifiable infectious disease should occupy a bed in a general hospital for a long time, when he could quite well have been treated in a fever hospital. In my submission, it is a very regrettable tendency to admit notifiable infectious diseases to general hospitals, where the clinical approach is mainly curative, in contrast to the combined preventive and therapeutic outlook expressed in the fever hospital.

I have long held the view that the modern infectious diseases hospital should not restrict its scope to the notifiable diseases, but, subject to the limits of the available accommodation and the facilities for treatment, should also accept for investigation and treatment any condition in which microbic infection is suspected or proven. This would cover the throat infections, the pneumonias, the infections of the nervous system, all forms of gastro-enteritis and food-poisoning, obscure pyrexia, and tuberculosis. At Sheriff Hill, nearly half of the bed accommodation is reserved for tuberculosis

of two special categories—bone and joint disease, and miliary lesions of the meninges and lungs. Indeed, it was in a side-ward of the pavilion devoted to the latter conditions that the patient with subacute bacterial endocarditis was treated. Cases of pulmonary tuberculosis also have frequently been received in the cubicles of the hospital, and have been treated there until more appropriate accommodation was found. This hospital is therefore already making a reasonable contribution to the solution of a national problem.

The policy of using former isolation hospitals to provide accommodation for the tuberculous is being fully worked out in the Newcastle region. In the Gateshead group, one of the two fever hospitals has been entirely given over to the treatment of pulmonary tuberculosis, leaving Sheriff Hill Hospital as the only fever hospital for an area with a population of nearly 200,000.

JAMES GRANT
Gateshead. Medical Officer of Health.

PUBLIC-HEALTH SALARIES

SIR,—In your article of Dec. 30, you say of the new salary-scales for doctors in the public-health service: "Unfortunately they do nothing to attract able men into the junior ranks, and little to give the service the prestige it needs." All doctors engaged in this service must surely endorse this statement. If this scale is accepted, I hope that it will be with the appropriate degree of protest, and that steps will at once be taken to remedy this situation.

Liverpool. G. STUART ROBERTSON.

TROPIC OR TROPHIC ?

SIR,—May I call attention to my letter in your issue of Sept. 30, 1944 ? In spite of Dr. Burn's postulate, the logic is all in favour of tropic. Atrophy does not necessarily mean degeneration by lack of nutrition; severance of a nerve causes atrophy of the corresponding muscle by inactivity while the nourishing blood-supply remains intact. Perhaps, in view of the derivation of the word, atrophy should not be used in this case, but it does not seem that a substitute word exists. The fact that some words are in use which according to our present knowledge are misnomers but which have acquired general acceptance by tradition (e.g., hysteria as derived from uterus) does not justify the creation of new misnomers with full consciousness of that fact. It is to be deplored that many scientists do not attach more importance to the correct use of scientific language than the common man who, following the manner of the majority, uses I and me interchangeably, ignores the accusative of who, and does not even "feel badly" about it.

Flushing, N.Y. ARTHUR E. MEYER.

THE LIQUORICE STORY

SIR,—In your annotation of Sept. 23 on the interesting observations by Professor Borst and his colleagues, published in the same issue, you remarked: "This fascinating investigation in Holland provides an interesting point of contact between those who work on plant hormones and the researchers in animal endocrinology." I would, therefore, like to draw your attention to the results obtained by Costello and Lynn.[1] They noted that fluid extracts of glycyrrhiza contain œstrogenic principles (probably œstriol), an antihormone, benzoic acid, and two other non-œstrogenic substances. The deoxycortone type of reaction noted by the Dutch workers may presumably be due to œstriol, and may therefore explain the failure of the succus preparations used by them in Addison's disease and in rheumatoid arthritis.

Haffkine Institute, Bombay, India. ASHOK I. MEHTA.

1. Costello, C. H., Lynn, E. V. *J. Amer. pharm. Ass.* 1950, **39**, 177.

THE FALSE "ACUTE ABDOMEN"

SIR,—During twenty-three years at sea I have operated on four cases of perforated peptic ulcer. In the same period I have seen three cases in which the symptoms resembled those of an acute abdominal disorder but recovery took place without operation. In cases of board-like abdominal rigidity I follow an unorthodox routine. The patient is given either morphine or 'Omnopon' in fairly large doses while the operating-theatre is being prepared; on board ship this takes about three hours. Though frowned on by surgeons, this is, I suggest, good practice in the conditions prevailing at sea. The patient is going to remain under the care of the same doctor, so there is no question of masking symptoms for another surgeon; and I believe that injection of an analgesic clarifies the diagnosis, as it did in the three cases described below. In fact, it saved these three patients from operation. It seems probable that had they been seen in hospital ashore, they would have been taken straight to the operating-theatre for laparotomy.

CASE 1.—Many years ago, at about 8.30 one morning, I saw a carpenter's mate who had woken up with acute abdominal pain. He had no previous history of abdominal symptoms. On examination his abdomen was board-like. Being in those days single-handed with no nursing staff, I took a rather gloomy view of the case; but, while the operating-theatre was being prepared, he was given gr. $^1/_3$ morphine. He gradually recovered in about four hours, and completed the three months' voyage without recurrence.

Subsequent inquiry elicited the fact that the fan in his cabin had been playing on his abdomen all night; and the final diagnosis was abdominal cramp due to this cause.

CASE 2.—A male passenger had had abdominal pain nine months before; no radiological evidence of gastric ulcer had been found. Earlier his appendix had been removed. At 8.30 A.M. he began to have acute abdominal pain. He ate no breakfast and treated himself with one dose of tinct. chloroformi et morphinæ and later two brandies. I was called to see him at 3 P.M. There was board-like rigidity of the abdomen, more pronounced on the right side but extending into the left iliac fossa. Temperature 98·2°F. Pulse-rate 60 per min. Heart and chest normal. Urine: no abnormality found. Perforated peptic ulcer, probably duodenal, was diagnosed. The patient was given gr. $^2/_3$ omnopon, and the operating-theatre was prepared.

From then on, his condition gradually improved. At 5.45 P.M. he was comfortable, but no intestinal sounds could be heard and there was still guarding over the gallbladder area. By 8 P.M. he had fully recovered. A diagnosis of acute cholecystitis was considered, but was discarded because the rigidity extended into the left iliac fossa and intestinal sounds were absent.

CASE 3.—Four days after operating on a case of perforated duodenal ulcer, I saw a male member of the crew who reported sudden abdominal pain; no diarrhœa at that time, no previous attack. Temperature 97·6°F. Pulse-rate 96 per min. Vomited twice. Abdomen rigid all over but not quite board-like. Chest and heart normal. Urine: trace of albumin and sugar. Pupils, ankle-jerks, and optic discs normal.

Recently perforated peptic ulcer was diagnosed, and the operating-theatre prepared. Omnopon gr. $^1/_3$ given. Rigidity gradually decreased and diarrhœa ensued. Final diagnosis —gastro-enteritis.

The possibility of tabetic gastric crisis was not investigated in the first of these cases but was excluded in the last two. I have observed board-like abdomens in both diabetic coma and uræmia, but these were excluded in these three cases. Salt deficiency was not a causal factor in either of the last two cases, which occurred in comparatively cool weather.

Goldstone and Le Marquand [1] reported cases of "acute abdomen" due to acute myositis (Bornholm disease) in which the patients were saved from operation only by the recognition of an epidemic. In the cases described here, however, there was no question of an epidemic; and the onset, unlike that in all but one of the cases recorded by Goldstone and Le Marquand, was sudden.

1. Goldstone, B. W., Le Marquand, H. S. *Lancet*, 1946, ii, 267.

Spontaneous healing of a peptic ulcer is possible, but it is difficult to believe that it occurred in each of these three cases. Sometimes surgeons operate on what seem to be typical cases of perforated peptic ulcer and find no perforation; and in this connection Avid [2] mentions "formes frustes." These difficult cases usually seem to be in young patients. My three cases were in young men, aged 25–35 years.

On board ship cases are usually seen very early, which gives the ship's surgeon an advantage over his colleagues ashore. With acute abdominal disorders the prognosis is probably very little affected by a delay in operating of up to twelve hours from the onset; and during this period, with the help of a powerful analgesic, the false "acute abdomen" will have declared itself, so that some delay in operation is justifiable.

Orient Steam Navigation Company Ltd., London. H. M. ROYDS JONES.

PURIFICATION OF VACCINE LYMPH WITH PHENOL

SIR,—Gordon [3] in 1925 found that vaccinia virus is strongly resistant to phenol, since even a 1 in 20 solution does not completely destroy it; and Stevenson and Butler [4] used 0·5% phenol to prevent accidental contamination of vaccinia in the embryonated egg. Gins [5] and Lehmann [6] advocated the purification of vaccine lymph with phenol, but it was not generally used in the routine preparation of lymph. Last year McClean [7] reported that phenol in a final concentration of 0·4% has no adverse effect on the potency of vaccine lymph, and will so reduce the number of contaminating bacteria that the lymph can be issued for vaccination a fortnight from the date of trituration of the crude pulp; moreover,

TABLE I.—COMPARATIVE VIABLE COUNTS

Batch no.	Colony count (thousands per ml.)											
	Glycerinated lymph						Phenolised lymph					
	A	B	C	D	E	F	A	B	C	D	E	F
1	∞	∞	100	60	40	20	∞	12	11	10	8	4
2	∞	∞	80	60	30	20	∞	14	14	12	6	3
3	∞	∞	60	60	30	16	∞	14	12	10	8	4
4	∞	∞	80	50	30	14	∞	10	10	9	6	3
5	∞	∞	70	60	20	14	∞	8	8	6	5	4

∞ = too many to be counted accurately.
A = immediately after preparation.
B = a fortnight " "
C = 2 months " "
D = 6 " " "
E = 9 " " "
F = 12 " " "

phenolised vaccine lymph kept at a temperature below 0°C maintains its potency with a good reserve margin even after a year from the time of its preparation.

These findings of McClean have been confirmed in an investigation at the Stack Medical Research Laboratories at Khartoum. Five batches of vaccine lymph were prepared. The bellies of five sheep, the vaccinifers, were shaved and lightly scarified with a fine wire gauze, and seed lymph of high potency was rubbed in with the gloved left hand. No dressing was applied to the vaccinifers, and no antiseptic was used for the crude pulp, which was scraped four days later. The takes were good and the yields soft and adequate in quantity. The pulp from each sheep was divided into two equal parts: one part was glycerinated in the usual routine way

TABLE II.—COMPARATIVE POTENCY TITRATIONS

Batch no.	Dilution	Glycerinated lymph					Phenolised lymph				
		A	B	C	D	E	A	B	C	D	E
1	10^{-4}–10^{-6}	++	++	++	++	++	++	++	++	++	++
	10^{-7}	++	++	+	+	+	++	+	+	+	+
	10^{-8}	+	+	+	+	+	+	+	+	+	+
2	10^{-4}–10^{-6}	++	++	++	++	++	++	++	++	++	++
	10^{-7}	++	++	+	+	+	++	+	+	+	+
	10^{-8}	+	+	+	10	10	+	+	+	+	8
3	10^{-4}–10^{-5}	++	++	++	++	++	++	++	++	++	++
	10^{-6}	++	++	++	++	+	++	++	++	++	++
	10^{-7}	+	+	+	10	8	+	+	+	+	10
	10^{-8}	+	+	10	6	4	+	+	4	6	4
4	10^{-4}–10^{-6}	++	++	++	++	++	++	++	++	++	++
	10^{-7}	+	+	+	+	+	+	+	+	+	+
	10^{-8}	+	+	16	6	6	+	10	6	8	8
5	10^{-4}–10^{-6}	++	++	++	++	++	++	++	++	++	++
	10^{-7}	+	10	4	6	3	+	+	10	4	3
	10^{-8}	10	4	2	4	4	8	6	3	4	2

A = immediately after preparation.
B = 2 months " "
C = 6 " " "
D = 9 " " "
E = 12 " " "

++ = confluent take.
+ = semiconfluent take.
Numerals indicate number of discrete vesicles.

—i.e., 4 parts by weight of 50% glycerin solution containing 0·05% clove oil were added to it, triturated, and kept at temperature below 0°C—and the second half was treated with phenol according to McClean's method.[7] Thus five batches of glycerinated vaccine lymph and five phenolised batches were available for comparative bacteriological tests and potency titrations.

Viable counts and potency tests were carried out simultaneously: immediately after preparation, after a fortnight, after 2 months, after 6 months, after 9 months, and after 12 months from the time of preparation. Viable counts were done by the usual pour-plate method. The vaccine lymph was diluted 1 in 1000 parts in distilled water and 1 ml. was added to 15 ml. of melted nutrient agar, shaken thoroughly, and poured in petri-dishes incubated at 37°C for 24 hours, and the colonies were counted. Three plates were used for each batch, and the mean of the colony counts was taken. All precautions are taken to reduce the error inherent in the plate-count method. Tests for the presence of hæmolytic streptococci and gas-producing anaerobes were made on blood-agar plates, gentian-violet blood-agar plates, and Roberson's cooked-meat media.[8] The colony counts are shown in table I.

For titrating potency, albino rabbits were used. The hair from both flanks was removed with a depilatory powder.[9] Then each flank was divided into areas of 14 sq. cm. each, which were lightly scarified with a needle and had 0·1 ml. of the appropriate dilution rubbed in with a glass rod. The rabbits were lightly anæsthetised with ether.[10] To eliminate factors due to variations in sensitivity to vaccine lymph the same rabbit was used for both the glycerinated and the phenolised vaccines, one flank for each, and each batch was tested in two rabbits. The results of vaccination were read on the 4th day and again on the 6th day of vaccination. The results of takes are shown in table II.

It will be seen that the contaminating organisms in the phenolised batches were reduced in a fortnight to within the limits allowed by the Therapeutic Substances Regulations, 1944; and that the phenolised lymph kept at a temperature below 0°C for a year showed no deterioration in potency and compared favourably with the glycerinated controls.

Stack Medical Research Laboratories, Khartoum. M. A. HASEEB.

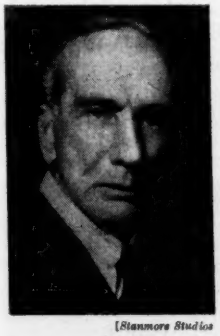
2. Avid, I. Companion to Surgical Studies. Edinburgh, 1949.
3. Gordon, M. H. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 98, 1925.
4. Stevenson, W. D. H., Butler, G. G. *Rep. publ. Hlth med. Subj., Lond.* no. 87, 1939.
5. Gins, H. A. *Klin. Wschr.* 1924, **3**. 634.
6. Lehmann, W. *Z. Hyg. InfektKr.* 1937, **119**, 21, 513.
7. McClean, D. *Lancet*, 1949, ii, 476.
8. Ministry of Health. Report of the Committee on Vaccination. London, 1928.
9. Mackie, T. J., McCartney, J. E. Handbook of Practical Bacteriology. Edinburgh, 1948.
10. Horgan, E. S. Haseeb, M. A. *J. Hyg., Camb.* 1939, **39**, 615.

Obituary

GEORGE LENTHAL CHEATLE

K.C.B., C.V.O., F.R.C.S., Hon. F.A.C.S.

George Lenthal Cheatle was born in 1865. He was educated at Merchant Taylors' School and King's College, London. Hard work as a student brought him rapid qualification, and in 1887, while awaiting his house-appointments in King's College Hospital, he acted as assistant demonstrator of anatomy. In 1889 he was appointed Sambrooke surgical registrar, in 1892 demonstrator of surgical pathology, and in 1893, on Lord Lister's retirement, assistant surgeon. In 1900 he became full surgeon, teacher of surgical pathology, and honorary director of the pathological museum, but shortly afterwards his work at King's was interrupted by his appointment as consulting surgeon to H.M. Forces in the South African War. His service was recognised by mentions in despatches and appointment as C.B.



[*Stanmore Studios*

On his return to civilian life he carried out his routine work at King's and some smaller hospitals with vigour. The accumulation of a large consulting practice was inevitable to a man of such distinction, but he remained a keen and conscientious teacher and a rabid research-worker. Apart from these, a growing interest in the Naval medical services was apparent when the German menace loomed on the horizon, a few years before the 1914–18 war, and he became a member of the Naval Advisory and Examining Board, and of the Admiralty Departmental Committee, Royal Naval Medical Service. When war was declared, he was given the rank of surgeon rear-admiral and made consulting surgeon to the Navy, serving as such throughout the war, mainly at Haslar but also at sea. He was promoted K.C.B. in 1918.

In both wars he declined the shelter of the base, deliberately accepting any risks wherever his ability could best serve the wounded. In South Africa, on one occasion, he organised under fire a temporary operating-carriage in a train of wounded soldiers. At Gallipoli he was in a hospital ship in waters where hospital ships could claim little immunity from enemy action.

After the first world war he gave much time and thought to the reconstruction of the new King's College Hospital and its medical school. General surgery, he considered, had reached such magnitude that some elements should be divorced, particularly urology and orthopædics, and the creation of these departments under distinguished specialists was largely due to his influence.

In 1919 he was elected to the fellowship of King's College, and in 1923 he became senior surgeon of the hospital. He also served on the committee of management and was chairman of the medical board. In 1930 he retired from the active staff and was made consulting surgeon and emeritus lecturer in clinical surgery. His activities, however, by no means ceased; his zeal for research was given greater scope and he at last found more time to contribute the results to the medical journals. He was awarded in 1931 the Walker prize of the Royal College of Surgeons for his work on cancer, and in 1932 the honorary fellowship of the American College of Surgeons. *Tumours of the Breast*, written in collaboration with Max Cutler, embodies the substance of his research into breast cancer.

The year 1936 was the last landmark in this active life, when he undertook an extended lecture tour in the United States. So that he might be eligible to lecture at Hines Hospital, Chicago, a privilege accorded to none but American nationals, he was granted American citizenship for one week, an almost unprecedented concession which he greatly appreciated.

To this outline of his life we add the following tributes from his friends:

J. E. writes: "As a teacher Cheatle was unorthodox: for him the platform had little appeal; his intrinsic originality rebelled against the set lecture, the recital of the textbook, and he welcomed the distribution of systematic lectures to his colleagues. His method of teaching was insidious and penetrating; insidious since his listeners would leave with the impression that he asked their opinions because he valued them, and such corrections as he made were merely expressions of his view; penetrating, as I can affirm, for I remember to this day the lessons learnt at his tutorials more vividly than those from any other teacher. He was at his best with a small class, either holding a clinical demonstration in outpatients or in his private laboratory filled to overflowing with his personal histological sections. Some six of us closeted in his sanctum forgot the outside world; time meant nothing, carried away as we were by his enthusiasm in the demonstration of those beautiful sections and their significance. Not only was morbid histology learnt; we were infected by his tireless energy to unravel pathological problems, in those undergraduate days, the better to be equipped for their solution: he inspired confidence and courage to succeed, and the urge that hard work alone could achieve success. His chosen subjects were bacterial infections and the genesis of tumours, notably the latter, using as his material giant sections, cut with the giant microtome of his own design. These sections had first to be studied with the naked eye, then with a low-power magnifying glass, ultimately working up to the highest magnification. The object of giant sections was to show the normal, the transitional, and the established growth tissue in one piece. His methods demonstrated the relation of Paget's disease of the nipple to underlying carcinoma, indicating the need for radical surgery. Later researches showed that areas of leucodermia, sclerodermia, and Head's points of maximum intensity were likely infecting agents of superficial malignant disease.

"Lenthal Cheatle not only taught us the way to work, he was a patron of the various activities so important in the life of a medical student. He took a lively interest in the medical society, renamed in his time the Listerian Society, of which he was president. He encouraged outdoor games, particularly lawn-tennis, and presented a challenge cup for the annual singles championship; for many years he was president of the lawn-tennis club. As a student, he was himself a keen cricketer and a prominent member of the inter-hospital cup team; in later life, fishing and golf were among his interests.

"As a surgeon care, patience, and precision were his outstanding qualities, but he did not lack surgical boldness and brilliance in emergency. His technique followed the orthodoxy of his time, but he readily accepted and explored any novelty. Although an ardent disciple of Lister and Watson Cheyne, he was among the first at King's to become wedded to aseptic surgery, though not forsaking entirely the antiseptic, especially in skin preparation. No surgical innovations are associated with his name, but he was responsible for valuable modifications of the set operations which his co-workers were pleased to adopt. No instrument, excluding the Spencer-Wells hæmostat, is more widely used than Cheatle's forceps; it will be found in every hospital, nursing-home, and maternity institute throughout the civilised world. The grace of its shape, the poise of its neck, its utility, in many respects portrays its inventor; for he, like his brother Arthur H. Cheatle, was richly endowed by Nature.

"Tall, slender, and upright, with a winning smile, and a keen eye that missed nothing, Cheatle was welcomed by every society and social scale in any country; he was the perfect ambassador, as his titles cavaliere uffiziale of the Grand Cross of Italy, associate of the Order of St. John of Jerusalem, and chevalier of the Legion of Honour bear testimony. Yet he was simple in his tastes, very human, and imbued with an overwhelming care for the welfare of his fellow creatures. Kind and generous to his patients, he also offered material aid and encouragement to students and young graduates striving to climb the slippery ladder to their ambitions, and he was energetic in his efforts to help or defend the underling.

"His passing marks the end of an era. He assisted Lister at his last operation. Watson Cheyne, Cheatle, and Arthur Edmunds were the connecting links between the old and the new, and the great advocates of the principles and practice of Listerism. Each, through life, was impelled by the magnetic

influence and the noble example of the great master to research for the benefit of mankind. No greater tribute could be paid to Lenthal Cheatle than that he maintained the high tradition; he did his best."

C. P. G.W., who served with Cheatle in the South African War and the first world war, recalls how back at King's after the war as his registrar

"I became interested in his thorough investigations of carcinoma of the breast with large sections. Cheatle was an enthusiast and a surgical microscopist of the first order, and there can be few surgeons who during their lifetime have had such clinical experience of cancer of the breast, for he often performed ten or more radicals per week as a routine. He had a charming personality; everyone who came in contact with him was 'my dear boy,' and he was beloved by his house-surgeons and registrars, and his patients worshipped him. Handsome, tall, and suave, with a delightful manner, he will long be remembered at King's."

J. C. B. recalls that early in his surgical life Cheatle's mind "was turned to, and indeed we might say swamped by, pathology"; for he gave the impression of caring for little else.

"He used to run into the laboratory nearly every afternoon, perhaps with another specimen which he would orientate, give an instruction as to cutting more sections from a certain specimen, pick up such sections as were ready, and hurry off home to study the same, a proceeding which often lasted till the early morning. With such preoccupation he had few interests outside, and indeed was to some extent casual in practice. Scientific meetings did not interest him, but anyone mentioning a problem was promptly invited to come to the laboratory and work it out, this without it entering his mind that there might be no room or conveniences. He was generous, almost irresponsible, in money matters: it was practically impossible to get him to attend to the annual statement of accounts of the laboratory, and there was competition among cabmen to pick him up in Harley Street, about 1.45 P.M. Particular, almost debonair, in his dress, he retained the top hat and tail-coat long after they had been discarded by others. He had a mannerism of sighing deeply before answering a question, a subconscious imitation of Lord Lister as I have been told. People meeting him were made to feel at home at once by his friendliness; yet he was reserved about his private life, and it is comforting to know that he passed away peacefully at the home of his daughter."

A concluding tribute comes from H. C. E.:

"Cheatle had an arresting personality. He loved the unorthodox, and practised it in all he did. One might have regarded him merely as a poseur if it were not for the solid merit of his clinical and pathological work. He did not use a private car, and it was always a matter for astonishment when a London taxi-cab of the early '20s pattern disgorged on to the steps leading to the main hall of King's College Hospital the model of late Victorian sartorial perfection which Cheatle invariably was. He used to call it 'maintaining the dignity of Harley Street.' He carried this elegance even into designing the white coats he wore at outpatients and during his ward visits. He smoked cigarettes continually, using a long holder with a mechanical device for ridding itself of the unexpended portion of the cigarette.

"A precise operator, he was always anxious to make the operation appear, as he used to say, 'like a picture in a book.' To be his house-surgeon was an experience, for one never knew into what unusual action Cheatle's original mind would lead him. He was capable of making a withering remark to a junior who was guilty of slipshod work or lazy thinking; but one never resented it, for it was always well meant. Despite all these eccentricities, his zeal was unquestioned. He had a real passion for research.

"He was always happy when his ward-round was over, so that he could rush away to the little room in the hospital where was housed the giant microtome of his invention. There his technician would be cutting and staining sections of the whole breast removed at operation. Those sections that were ready for examination would be wrapped up in a brown-paper parcel for Cheatle to take home to Harley Street, where, in a little room on the first floor, overlooking Devonshire Street, he used to keep them in a state of apparent disarray. There seemed to be thousands of them littering this room; huge plates of glass, 10 inches square. It was fascinating to spend an hour or two with him there, and none would enjoy it more than Cheatle himself. He was not perhaps gifted with powers of lucid explanation, and was a little impatient if one was slow to see his point; but his opinions were based on the sure ground of morbid histology, and students and junior colleagues fortunate enough to be taught by him something of the pathology of the breast as he conceived it will not readily accept any alternative views. His uncompromising attitude towards his critics may, perhaps, be the reason why his work does not seem to have received quite the recognition in this country which its worth undoubtedly deserved."

Sir Lenthal Cheatle died on Jan. 2. His wife, formerly Miss Clara Jopp, died in 1942, and there were three sons and a daughter of the marriage.

ARTHUR JOHN HALL

Kt., M.A., M.D. Camb., Hon. D.Sc. Sheff., F.R.C.P.

IN 1889 Arthur Hall returned to Sheffield from Rugby, Cambridge, and Barts to join his father in general practice. He soon realised that another task lay ready to his hand, and with his appointment as assistant demonstrator in physiology at the Sheffield medical school he embarked on a life of unusually strenuous endeavour.

At the turn of the century provincial medical schools were mostly very poor relations of the metropolitan centres of medical education, and it was of the utmost importance to grasp the opportunities offered by the establishment of new provincial universities. When its new school was opened in 1888, Sheffield had a long leeway to make up: buildings, equipment, and staff were all far behind the requirements of a self-contained medical school. The prospect was enough to daunt the courage of the stoutest. But Arthur Hall was peculiarly suited to bring about the radical changes required. A clear insight into the difficulties of the situation, combined with steady optimism; a power of clear dramatic expression on platform and in committee; single-mindedness of purpose and subordination of private interest in the main object—these and other special qualities quickly collected round him a band of devoted workers. Continuously but unobtrusively he guided the development of the school, and after establishing a department of physiology he turned his attention to organising a department of pathology.

A colleague relates: "He was always known as 'Lord Arthur,' but 'King Arthur' might have been more appropriate since the round-table technique was a familiar device with him to promote professional harmony. This promotion of harmony had for him a high priority. With two large general hospitals, a municipal hospital, a separate maternity hospital of international repute, and a children's hospital, the chances of professional exclusiveness, jealousy, and friction were at a premium. It is not too much to claim that everyone who was a member of these medical staffs during the first thirty years of this century would acknowledge that Hall's had been the major influence in building up the present background of good will. He founded a Combined Staffs Club bearing the motto *Floreat Amicitia*, which now flourishes under the name of its founder. Very early in the century he also founded an abstracts club which met at his own house and pooled the results of medical reading. While surrounding himself with an aura of elaborate courtesy which rendered him rather unapproachable to many, his more genuine innate qualities were candour, openness to reason, and a personal kindness for which no trouble was too great. No single person will ever know the extent of his kindnesses, for they were all bestowed in secrecy."

Hall's devices to attract a first-rate staff to a school growing rapidly from small beginnings were ingenious:

Not seldom he would get himself elected to a newly formed chair and hold the post for a year or two till he could find a suitable occupant. This method, known to the profession outside Sheffield as musical chairs, was successful in obviating the appointment of an unsuitable candidate merely because he happened to be the only one available at the moment of first foundation. The negotiations through which Sir Edward Mellanby was appointed to a Sheffield chair were largely instigated by Hall. He also played a major part in the events which led to the granting of a charter to the University of Sheffield in 1905.

Clinical and administrative ability are not often closely associated, but Hall was a man who, if not of the very quickest intuition, yet by the solidity of his judgment and by his powers of minute observation, was able to advance medical knowledge. And he won his reputation as an administrator against a background of clinical achievement. His handling in 1918 of the new appearance of epidemic encephalitis was a masterpiece of accuracy and soberly progressive outlook, and he chose this disease as the subject of his Lumleian lectures to the Royal College of Physicians in 1923.

After he retired from the chair of medicine in 1931 he continued for many years to serve as a member of the university council and of the board of the faculty of medicine. Progressive deafness, however, led to his retirement from active participation in university affairs. Nevertheless he continued to interest himself in the progress of events in the medical school and in medicine generally.

"There was always a warm welcome for friends who visited him," writes G. A. C., "and his never-failing sense of humour was evident in the joking references he frequently made to his deafness. Yet this deafness must have been a sad blow to one who so thoroughly enjoyed participating as a 'cellist in quartets. The only complaint he expressed about his deafness was that it prevented him hearing the voices of his grandchildren. Naturally a man of retiring disposition who disliked publicity, he was happiest in the company of one or two intimate friends. Those who were admitted to this intimacy will always remember with affection the personality in which courtesy, wisdom, generosity of nature, humour, and high principles were all blended. He was indeed the green-fingered gardener of the Sheffield school of medicine, full of sympathy and understanding for the plants he cared for. His energy and enthusiasm were not guided by personal ambition but by a fine sense of loyalty to local institutions and to the profession of medicine."

His natural scientific bent had freer scope in the leisure his retirement brought; and his lively curiosity and keen observation were seen in his papers in our columns and elsewhere on such subjects as blinking, the parkinsonian smile, and cramp and salt balance. Though he gave unstintingly of his time and energy to Sheffield he had many outside interests. He had been elected F.R.C.P. in 1904 and he served the college as councillor, examiner, and censor. He examined for at least nine universities, and the quality of critical kindliness which led to this choice is made clear by A. I. G. McL's recollection of the membership examination:

"Hall pointed to a specimen jar containing a liver, but at first I was at a loss to tell him what was wrong with it. He gently said 'Look at the bottom of the jar,' and there amongst the debris were things like grape skins. After that we had an animated discussion about the behaviour of hydatid cysts. When I went to Sheffield in 1934 he was already a legendary figure. He had retired from the chair of medicine in 1931, but he still retained his interest in clinical medicine, and his trim, dapper figure, looking years younger than his actual age, could often be seen at the Royal Hospital, where one of the wards was named after him. A man of great culture and urbanity, he was always approachable and ready to advise his younger colleagues. Of his kindness I can speak with feeling."

As was perhaps inevitable for one who had been associated all his life with Sheffield, he was an authority on pulmonary industrial diseases and he was for some years chairman of the Medical Research Council's committee on pulmonary dust diseases and a member of the Industrial Health Research Board. In 1930 he attended the international conference on silicosis in Johannesburg. He was also a member of the Radium Commission.

In 1928 Sheffield had conferred on him an honorary D.SC. In 1936 he was knighted and the same year his friends at Sheffield presented him with his portrait by Mr. Ernest Moore (which we reproduce in part).

A. E. N. writes: "However powerful he was in dominating any situation for which he had direct responsibility, Hall never interfered with the freedom and responsibility of his colleagues or assistants. The one thing which thoroughly aroused his disapproval was lack of energy or interest in working for the good of the medical school. When the time came for his retirement he retired completely, and rigorously abstained from all interference. Thus his opinion was often spontaneously asked for. His medical teaching was sound and he conscientiously concentrated on bringing out the less gifted student. At special demonstrations he was clear and stimulating. Memory was rendered easy by punctuation with scraps of sardonic humour.

"His married life was remarkably happy, and the loss of his wife quite suddenly a few years before his own death made visible inroads into his reserve of health and enjoyment; but he endured all without complaint."

He died on Jan. 3, at the age of 84.

GATHORNE ROBERT GIRDLESTONE

M.A., D.M. Oxfd, F.R.C.S.

As we announced last week, Mr. Girdlestone, of the Wingfield-Morris Orthopædic Hospital at Oxford, died on Dec. 30. Son of the Rev. R. B. Girdlestone, honorary canon of Christ Church, Oxford, he was born in 1881 and educated at Charterhouse, at New College, and at St. Thomas's Hospital, which he entered as a university scholar in 1908. His first surgical post outside St. Thomas's was at the hospital near Oswestry now called the Robert Jones & Agnes Hunt Orthopædic Hospital, where for five years he worked both under the guidance of Sir Robert Jones and under the inspiring influence of Dame Agnes Hunt. At this time he had the misfortune to have a serious motor-cycle accident, which left him with a lung lesion. It was after this injury that he decided to dedicate his life to the care of crippled children. He had inherited his father's deeply religious nature and he entered orthopædic surgery with a sense of mission.

[Lafayette

At the beginning of the first world war Girdlestone served in the Royal Army Medical Corps, but his lung lesion prevented general service. In 1916 he was attached to the 3rd Southern General Hospital, Oxford, in charge of the orthopædic centre, an organisation which he had formed and which developed rapidly from the initial 56 beds to 400. With the help of Robert Jones, he took over some huts from the War Office which were re-erected in the grounds of what was then the Wingfield Convalescent Home, Headington, a small institution which had been founded in 1870. These huts were used by the hospital for seventeen years. In 1919 the Ministry of Pensions acquired the Wingfield Hospital as an orthopædic hospital for pensioners, though a 22-bed ward was reserved for the treatment of crippled children; but in 1922 the whole hospital was transferred from the Ministry of Pensions to the Wingfield Committee, and Girdlestone was made honorary surgeon and director. In 1930 he enlisted the sympathy of Lord Nuffield, with whose help the hospital was rebuilt and opened in 1933. His friendship with Lord Nuffield was also instrumental in gaining the latter's interest in the future of the Oxford medical school, which led to the Nuffield endowment of £2 million. In May, 1937, he was made Nuffield professor of orthopædic surgery, the first to hold

a chair in orthopædic surgery in this country; but he resigned this post at the beginning of the late war. He was then appointed regional orthopædic consultant to the E.M.S. and honorary regional consultant to the Army and to the Ministry of Pensions. In 1942 he was elected president of the British Orthopædic Association. Outside his professional work he was a first-class golfer. In his student days he represented Oxford, and only three months before his death he reached the semi-finals in a competition at St. Andrews.

Girdlestone's entire medical life was given to building an organisation which would realise the ideal trilogy of Hugh Owen Thomas and Robert Jones for the treatment of crippling conditions: "rest—surgical treatment—fresh air." To that end he launched a propaganda campaign with Robert Jones, initiated in 1919 by the publication of a plan for the organisation of orthopædics on a regional basis. They referred to the pioneer work of Miss Hunt in Baschurch, the place where they had first met. In 1920 both Robert Jones and Girdlestone organised the Central Council for the Care of Cripples, of which for some time the latter was joint honorary secretary. In 1925 he published in monograph form a scheme for the care of crippled children, basing his ideas on his experience at Headington, where the Oxford Orthopædic Region was given as an example for others to follow. Already the orthopædic organisation at Oxford served, apart from the central hospital (the Wingfield-Morris), eleven outside clinics and four general hospitals. In 1937, at Lord Nuffield's request, he visited South Africa to prepare a plan for the development of orthopædic surgery there. This plan was subsequently fulfilled; and the National Council for the Care of Cripples in South Africa was another outcome of his visit. He attracted to himself men from all countries who spent valued months and years working with and learning from him at Oxford. He had a breadth of outlook that knew no geographical or national barriers.

Conscious that functional recovery is the ultimate aim in traumatic surgery, he was a firm advocate of the segregation of accident cases from the care of the general surgeon to that of the orthopædic surgeon, and he was behind those who organised the accident service at the Radcliffe Infirmary, Oxford, in 1939, which, since its beginning, has been attended by the staff of the Wingfield. In 1948 he suggested a plan to integrate the regional orthopædic and accident service within the frame of the new National Health Service. When in that year he retired from his active duties, the posts he had created and held were occupied by younger men who had worked with him. Finally, in 1949, he was one of those who asked the help of Lord Nuffield to integrate the whole of the orthopædic, traumatic, research, and teaching activities of the Oxford orthopædic region into a single structure; and Lord Nuffield offered £50,000 for the purpose. When he died he was contributing to this organisation—the Nuffield Orthopædic Centre—as the culmination of his life-work.

A. Q. W. writes: "Girdlestone could justifiably have said of the Wingfield what Louis XIV said of the State, but he would have been the last person in England to have done so. His genuine humility would never allow him to claim more than a share in the evolution of all that the Wingfield is today. Yet those who knew him and followed the growth of his cherished institution realise that in truth the Wingfield was G. R. G. His vision and pertinacity created the physical Wingfield and overcame the difficulties which lie in the path of all pioneers. That in itself was great work and called for a personality which is given to few men, but can nevertheless be paralleled in other branches of medicine. But G. R. G. created far more than the buildings and organisation of the hospital. He inspired and maintained the spirit of the Wingfield, a spirit of clinical humility, of scientific honesty, of service, friendship, and happiness. The most casual visitor must be struck by the happiness that extends all through the Wingfield medical, nursing, and lay staff, and patients.

"G. R. G.'s Wingfield was no moated castle whose inmates worked in self-satisfied isolation. Early in the history of its evolution, G. R. G. realised the importance of going out into the surrounding neighbourhood to help with advice on orthopædic conditions. A network of clinics in hospitals and elsewhere was set up where expert diagnosis and after-care by the Wingfield staff was available for a large area round Oxford. In effect this meant that a regional service in orthopædics centred on Oxford was in operation for much of the counties of Oxfordshire, Buckinghamshire, and Berkshire long in advance of the National Health Service Act. When the appointed day came the Oxford Regional Hospital Board, therefore, was relieved of the detailed planning of a regional orthopædic service, for this had already been in existence for some years. The National Health Service Act might well have kindled a feeling of jealous resentment at so personal a structure as the Wingfield had become being handed over to an unknown and untried board, but G. R. G. showed none of this and was from the very start anxious only to help in any way he was able. He did not hesitate to accept the chairmanship of the board's orthopædic surgery advisory committee, where his services were of great value in extending the orthopædic service to cover the whole region."

Such ability as a planner and organiser was but the complement of Girdlestone's outstanding merits as a surgeon. Both as a clinician and as an operator he was in the first rank. His original technical contributions are many, among others his method of pseudarthrosis for advanced osteoarthritis of the hip, his tendon transplant for claw toes, his procedure of cap phalangectomy for hallux valgus, and his excision of the hip-joint in severe septic arthritis of the hip. Among his many written works on clinical subjects his book on *Tuberculosis of Bone and Joint* is the most widely known, and he was engaged in finishing a new edition just before he died. An article by him which we shall shortly be publishing reviews infection in the operating-theatre, in which he was profoundly interested. His attitude towards post-operative sepsis illustrated his honesty of mind. A readiness to suspect his own technique first, and that of the theatre staff only secondly, gave him an approach worthy of the best scientific tradition. Undeterred by difficulties caused by the rarity of cases of appreciable sepsis, he continued steadily to aim at the ideal of complete freedom from infections.

Few people are privileged to see the dreams of their youth realised; but Girdlestone was one of them. He was convinced that one day the "homes for incurables" would be replaced by institutions created to prevent the crippling consequences of many diseases, and he made the dictum of Robert Jones, "spirit of happiness and orthopædic treatment" the maxim of his life. A man of great affections, tender with sufferers, a sincere friend of his friends and all who surrounded him, he will live in the hearts of those who knew him and in the Wingfield which he brought to world repute from the first wooden hut he bought to be erected in 1919. He started where his teacher had left off, and he proceeded with untiring energy along the path clearly indicated by Robert Jones and Agnes Hunt. From them he took the flaring torch, and it was still in his hands when he fell.

J. T. writes: "I have never known a man who had such capacity for love and being loved. He has created in the Wingfield a sanctuary where he, the most modest of souls, was venerated like a new St. Francis. In his simplicity, directness, and affection for the poor and the crippled he had some features in common with the *poverello* of Assisi. His profound Christian beliefs, his inexhaustible energy to carry his work to a fulfilment, and his purity of appearance and bearing at all times and in all places made this parallel even closer. But G. R. G. was also a great planner and a good organiser.

"As a true man of genius he never knew, or even suspected, his worth. He disliked public recognition and was happy sitting in the back row. His modesty was apparent to the end by his refusing to have a memorial service dedicated to him. It has been said of Hugh Owen Thomas that the myth woven about him during his life scarcely allows one to see the man himself. I hope that the memory of G. R. G. grows into a myth which becomes part of general medical teaching; that of a man who healed even more by the power of his love than by that of his supreme surgical skill. Above all I am grateful to him for reaffirming my belief in the goodness of human nature."

In his early days at the Shropshire orthopædic hospital, Mr. Girdlestone married Ina Chatterton, and she remained his companion and firm supporter till his death.

CHARLES ERNEST WEST

B.A., B.M. Oxfd, F.R.C.S.

Mr. West, consulting aural surgeon to St. Bartholomew's Hospital, died on New Year's Day at his home in South Devon, at the age of 77. Second son of the late C. P. West, of Ambleside, he received his earlier education at the Merchant Taylors' School, Crosby, where he obtained a classical scholarship admitting him to Balliol College, Oxford, in 1891. At Balliol he had a distinguished career and was in residence the unusual period of six years. He was fortunate in his tutors, first Evelyn Abbott and then Sir John Conroy. In his first three years he read classics, but after gaining a first in classics (mods.) in 1893, he turned to chemistry and gained a first in natural science in 1895. He then joined the Oxford medical school and in 1897 won an open scholarship to St. Bartholomew's Hospital. In 1900 he was awarded the Brackenbury surgical scholarship and the Sir George Burrows prize, and took the B.M. degree. Having served as house-surgeon to Mr. Alfred Willett, he passed the final F.R.C.S. and was appointed a junior demonstrator of anatomy under Sir Holburt Waring. At this time the hospital was improving and reorganising its special departments, and in 1902 West became first assistant to Mr. A. E. Cumberbatch in the aural department. When he succeeded Cumberbatch five years later he was an experienced and skilful operator and had already contributed a number of papers to the medical journals, besides undertaking bacteriological research with the guidance of Sir Frederick Andrewes and Lord Horder. Between 1910 and 1920 he played an active part as a member of the otological section of the Royal Society of Medicine. He was the new author of Diseases of the Ear in Walsham's *Surgery*, and joint author of *Operations of Aural Surgery* written principally for the aid of house-surgeons. A joint paper on experience and results in operations on the labyrinth, which he read at the Royal Society of Medicine was the first important British report on this subject written from personal experience.

After more than a decade in which he continued to carry on a large and increasing hospital and private practice, West startled his friends by deciding to retire, and he left London in 1921. He was elected consultant aural surgeon and a governor of St. Bartholomew's Hospital, but went to live at Flushing, near Falmouth, where, after a strenuous life, he was able to enjoy one of his favourite hobbies, sailing and motor-boating. Some years later he left Cornwall and moved to Sturminster in Dorset, where during the late war he joined the Home Guard, serving as major and medical officer of the 4th Dorset battalion. In the first world war he had held a Territorial commission in the R.A.M.C., and had been attached to the (Military) Hospital at Camberwell with other members of the St. Bartholomew's staff, under Sir D'Arcy Power as commandant. After the second war he left Dorset and took up residence at Budleigh Salterton in Devon.

With those who knew him well, West was a brilliant conversationalist; but he was reserved and modest about his accomplishments and never sought society. He was a keen critic of men and affairs and a connoisseur of good things, from wines to Persian carpets. He was fond of writing and wrote well, at one time ofter contributing to the public press articles (usually anonymous) on non-professional subjects. Though hardly a wit, he had a keen sense of humour—sometimes rather pungent. He was a fearless speaker and a man of strong convictions, capable of rapid decisions. With his gift of repartee he might have made a name for himself at the Bar, or with his talent for administration he might have become a captain of industry. In the early days of motoring it was always a delight to accompany him to Olympia; for he was a man of many interests, and at the annual motor show he never failed quickly to recognise developments of practical importance. His appreciation of music induced him to possess himself of a harp, on which he was no mean performer.

West first married in 1908. After the death of his wife some years later, he married Miss Kathleen McCrossan, who was his devoted companion to the end. He had no children.

S. S.

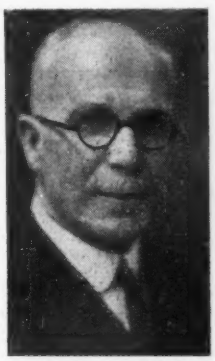
THOMAS FRASER

C.B.E., D.S.O., M.A., M.B., Ll.D. Aberd., D.L.

By the death of Dr. Thomas Fraser on Jan. 2, Aberdeen has lost one of its most distinguished medical men and a well-beloved physician.

He was born in 1872, the son of Provost Thomas Fraser of Kintore, Aberdeenshire. From Robert Gordon's College he proceeded to Aberdeen University, graduating M.A. in 1894 and M.B. four years later. While in general practice in the northern district of Aberdeen he was appointed assistant in the university department of materia medica and he was also clinical tutor at the Aberdeen Royal Infirmary.

Early in his medical career Fraser took a keen interest in diabetes and he did research of distinction in this field. Along with John Rennie, D.SC., he made extracts of the islet tissue of the pancreas in *Lophius piscatorius*, the angler fish, of which, as Rennie and he remarked in their paper in the *Biochemical Journal* (1907), there was an ample supply at the Aberdeen fish market. Fraser treated a series of diabetic patients with this extract, and in one patient he gave the extract by subcutaneous injection for four days; but he abandoned the method on account of the amount of the reaction caused by the hypodermic injection. Accurate and easy methods were not yet available for estimation of the blood-sugar, though a tentative method, curiously enough, was published in the same volume of the *Biochemical Journal* by Edie and Spence. It is probably true to assume that this attempt to use an insulin extract was the first on record, anticipating the work of Banting, Best, and Macleod in 1921.



[MacMahon

The outbreak of war in 1914 found Fraser mobilised with the 1st Highland field ambulance, and he was in command of the 89th field ambulance at the landing at Helles in 1915. Later he saw action in Gallipoli, Egypt, and France, where he commanded the 51st Highland casualty-clearing station and later was A.D.M.S. to the 47th London division. For his services he was awarded the D.S.O., was five times mentioned in despatches, and was appointed C.B.E. in 1920.

At the end of the war he returned to his practice in Aberdeen, where his skill, wisdom, and unremitting effort earned the respect and affection of many patients, both in town and county; for as A. L. writes "Fraser's dignified manner, his sound knowledge, and his wisdom were qualities which gave to his visits a peculiar charm and value, and although always busy he always had time to talk with either a patient or a colleague." He was appointed physician to the wards of the Aberdeen Royal Infirmary and lecturer in clinical medicine at Aberdeen University. In his ward rounds he met the large number of post-war students, many of whom had themselves seen service, and to these he imparted both sound clinical teaching and the wisdom acquired in medical practice. He had taken a full share in the discussion and negotiations before the introduction of National Health Insurance in 1911, and time had shown the wisdom of his advice. Now in the '20s he again took a prominent part in the medical welfare of the north-east of Scotland.

The joint hospital medical scheme had been a creation in the minds of the late Prof. Matthew Hay and Sir Ashley Mackintosh, and Dr. Fraser presided over the meetings of the Aberdeen Medico-Chirurgical Society where the details of this important scheme were promulgated in 1927. His personal influence was of value in raising the large sum of £600,000 required to complete this great concept in 1936.

Many honours came to him in the course of these years. He was elected president of the Aberdeen Medico-Chirurgical Society in 1927. He served on the council of the British Medical Association and he held the presidency from 1939 to 1942. He was a member of the General Medical Council from 1941 to 1946. His own university conferred on him the degree of LL.D. in 1939 and his city made him deputy lieutenant.

He is survived by his wife and two sons.

HERBERT FRENCH

C.V.O., C.B.E., D.M. Oxfd, F.R.C.P.

Dr. Herbert French, consulting physician to Guy's Hospital and formerly physician to H.M. Household, died in London on Jan. 1, at the age of 75.

He entered Guy's as a student in 1898, after taking a first-class in the final honours school of physiology at Oxford, where he had been a scholar of Christ Church. As a student he won many prizes, and two years after qualifying in 1900 he was awarded the Radcliffe travelling fellowship. In the same year he took the M.R.C.P. and was appointed medical registrar at Guy's. His success in this post led to his election as assistant physician in 1906.

[*Weston's Studios*

Up to the time of French's appointment Guy's had had few Oxford graduates on its staff, but in the next few years Hurst, Hunt, and Poulton were appointed, so that in 1914 all the four assistant physicians were Oxford men. In 1907 French was elected F.R.C.P. and the following year he delivered the Goulstonian lectures on Medical Diseases of Pregnant Women. On the retirement of Sir William Hale-White in 1917 French became physician to the hospital.

In the first world war the foresight of Lord Haldane, at the War Office, had ensured that the services of many London physicians and surgeons should be available to the Army by giving them commissions in the Territorial Army on a part-time basis, so that while continuing their civilian hospital work they could attend military hospitals in the London area. Soon after the outbreak of hostilities French was in khaki and he performed military duties throughout the war. His programme was already full, for he had quickly built up a large consulting practice and his services were sought by general practitioners all over the country. Nor did he neglect his duties at Guy's, where he was a popular and effective teacher.

Up till about 1920 it was the custom for the assistant physicians at Guy's—and, indeed, at most other teaching hospitals—to do all the routine necropsies, and the experience gained by performing three or four post-mortems every week for many years laid the foundation of the remarkable clinical sense of the physicians of that epoch. French, like his seniors and contemporaries, was not a specialist. Nor would he have claimed to be a research-worker. His interests embraced the whole field of medicine and by training and experience he was a sound all-round physician. This outlook was appropriately reflected in his contributions to medical literature, which consisted mainly of articles in works of reference, such as Allbutt's *System of Medicine* and English's *System of Treatment*, in which his gift for lucid exposition found a worthy outlet. His magnum opus, the still widely read *Index of Differential Diagnosis*, was a not unsuccessful attempt to approach clinical medicine through symptoms rather than by formal descriptions of diseases. His small book, with Dr. E. E. T. Nuthall, on *Medical Laboratory Methods* was one of the earliest books for students on this subject.

When he resigned from his hospital appointments in 1929 he was at the height of his fame. But he was perhaps wise to retire at an age when he could still enjoy his leisure after so busy and exacting a professional career. At his country home, Cudworth Manor, Newdigate, he indulged his taste for agriculture and he became a fruit-farmer, jam-maker, and cider-maker.

One of his students recalls waiting on the steps of the colonnade at Guy's for French's handsome well-dressed figure, "for he was one of the few London consultants who did not change his sartorial habits in the 1914–18 war. Up to his last round he always arrived in tail coat, top hat, white spats, and carrying a gold-headed cane. His teaching was always popular both for its intrinsic worth and also, perhaps, for his habit of retiring in the middle of the round to the ward theatre so that teaching could continue while he and we indulged in a cigarette. His hospitality will also be gratefully remembered. In those days it was the practice of all members of the staff to give dinner parties for their firms every three months, and those at French's house were on a lavish scale, often ending with a flutter at roulette." He gave hilarious dances at Cudworth, where a guest might don wellingtons and help feed the pigs.

P. T. writes: "French took great trouble with his students and was especially keen on teaching them diagnosis—the methods of diagnosis and complications of disease. One striking instance of his method was that he trained himself to imitate various convulsions, fits, and characteristic gaits and to repeat these before his class of students. There must still be some of his former pupils who have seen Dr. French having a realistic epileptic fit on the floor of the ward or demonstration room. He was also equally keen on the routine work of having the clinical reports bound and indexed at the end of the year. French commenced this work early in January: many registrars were a year or more behindhand with this part of their work."

Dr. French leaves a son and a daughter by his first marriage to Amy, daughter of Sir James Sawyer. She died in 1946, and in 1948 he married Mrs. Nora McDonald, who survives him.

SIR PHILIP PANTON

W. H. McM. writes: "Meeting Panton for discussion was always a pleasure. Seated beside him at his desk in the ministerial office which he shared with three others, one listened to a quiet persuasive voice advocating a change in the work or personnel of the laboratory. A dissenting reply would cause his spectacles to slip down his nose and the corners of his mouth to fall in mild astonishment; a trace of firmness would then be discernible through the soft blueness of his eyes as they turned towards you. When you eventually agreed and saw the wisdom of his argument—and you could be sure that any move he proposed would be to the advantage of all concerned—he would smile generously, opening his mouth in almost a gasp in a way which was highly characteristic. At lunch at St. Stephen's Restaurant after the interview he would inquire after many acquaintances, including the technicians and their families. And then, pipe in hand, he returned across Parliament Square, waving farewell as he disappeared behind the sandbagged approach to Caxton House West. His letters, often written hurriedly in an untidy hand, were notable for their conciseness and clarity, few of them ending without a sly touch of humour. In committee he was sympathetic, unhurried, and watchful, having the knack of leading the meeting back to the point. But he could be firm if opposed and the person who was not impressed with the advantages to the community of a service in clinical pathology might meet with a most withering and quite unexpected retort. On the occasion of his pastoral visits, red-letter days in the laboratories, he found time to visit the pathologists in their homes, and he accepted invitations to speak in American hospitals.

"At Otter's Pool he lived surrounded by the treasures he prized—books, portraits, and seascapes. His bedroom opened on to a veranda which overlooked the lawn and his beloved watergarden, designed by him and largely fashioned with his own hands, for he was adept at building a wall, improvising a rustic bridge, or constructing a pool. It was a garden such as would have delighted William Shenstone, while the waters

were a paradise of ripples and shade for the fish he befriended. But the regular visitor might notice changes in the landscape and colourful islands would appear in the waterways. Beneath the veranda was the loggia adorned with stuffed birds, relics of his boyhood; here on summer evenings he would reminisce on his early trips to New Zealand and the Faroes. He was for his age unusually tolerant of cold and his habit of insisting on half-open doors was sometimes hard to endure. The grey flannel trousers, the shaggy Harris jacket, and the pipe were old and trusted friends, as was his faithful Wu. His illness showed itself not long after retirement and regretfully he laid his spade and wheelbarrow aside; but he continued to plan fresh improvements and enjoyed much of his time in the garden. For the rest he sat in his wicker armchair watching for the squirrel in the blue spruce tree and writing short stories which were fun to read. At first he continued to attend meetings because of the opportunity they provided of seeing friends, but the journeys overtired him and he accepted defeat philosophically and with his usual good humour. The mists of late autumn then settled on the pools and he saw the leaves of his favourite yellow catalpa fall for the last time on to the dewy grass."

SIR LEONARD PARSONS

R. E. S. writes: "The obituaries in the medical journals, and the moving address by Prof. T. L. Hardy at the memorial service in Birmingham Cathedral, emphasised that Sir Leonard Parsons used his great gifts to great purpose. As one living on the periphery of the Birmingham region, I would like to pay credit to another of his varied activities—his desire to make the National Health Service work for the good of all. Perhaps this is typified by the entry opposite his name in the consultants' directory, that he was a specialist in general medicine and pædiatrics and that he was available anywhere in the region. He willingly travelled any distance without thought of reward and often at great personal inconvenience. If possible he preferred a consultation not to interfere with his going to church or the family lunch, especially when the grandchildren were present, but otherwise nothing stood in his way. As he grew older so he seemed ever more willing to help others, especially mothers in distress. If his example of coming to the periphery is followed by the younger generation and if credit for good work done there is appreciated centrally as it was by Sir Leonard Parsons, we can look forward to a fraternity living and striving together for a happier country."

Appointments

ALEXANDER, J. G. U. O., M.B. Lond.: consultant in bacteriology, Hull Royal Infirmary.

DROLLER, HUGO, M.D. Munich, M.R.C.P., M.R.C.P.E.: consultant geriatric physician, hospitals in No. 21 (Leeds A) and No. 22 (Leeds B) hospital management committee groups.

FARR, F. J., M.B. Brist., D.M.R.E.: consultant in radiology, hospitals in No. 11 (Dewsbury, Batley and Mirfield) hospital management committee group.

FORSTER, WILLIAM, M.B. Durh., D.P.M.: psychiatrist, Storthes Hall Hospital, Kirkburton, Yorks.

HARRISON, E. J., M.B.E., M.A., M.B. Camb., D.P.M.: psychiatrist, Bootham Park Hospital, York.

JARMAN, D. E., M.R.C.S.: psychiatrist, Storthes Hall Hospital, Kirkburton, Yorks.

KENNEDY, A. F., O.B.E., M.D. Dubl., M.R.C.P.I.: asst. senior M.O., South East Metropolitan Regional Hospital Board.

O'BRIEN, NORAH, L.R.C.P.I.: M.O., Tanganyika.

PICKUP, J. D., M.D. Leeds, D.C.H.: consultant in pædiatrics, hospitals in No. 8 (Pontefract and Castleford), No. 9 (Wakefield A), and No. 11 (Dewsbury, Batley and Mirfield) hospital management committee groups.

REID, FRANK, M.B. Leeds, D.M.R.D.: consultant radiologist, hospitals in Harrogate and Ripon hospital management committee group.

ROGERS, A. C., M.R.C.S., D.M.R.D.: consultant radiologist, hospitals in Hull A and B and East Riding hospital management committee groups.

SHILLITOE, A. J., M.B. Lond., M.R.C.P.: consultant in pathology, Hull Royal Infirmary.

SIMONS, E. L., M.B. Camb.: consultant in pathology, hospitals in Goole, Howden, and Selby, and Pontefract and Castleford hospital management committee groups.

SIMPSON, R. A. H., M.R.C.S.: appointed factory doctor, Lydd district, Kent.

SWEETNAM, W. P., M.D. Manc., M.R.C.P., D.P.H., D.C.H.: consultant pædiatrician, hospitals in Huddersfield and Halifax hospital management committee groups.

News

University of Oxford

On Jan. 16, convocation will be asked to approve a proposal to confer the honorary degree of D.C.L. on Sir Godfrey Huggins, F.R.C.S., prime minister of Southern Rhodesia.

Queen's University, Belfast

On Dec. 20, the following degrees and diplomas were conferred:

M.D.—R. D. N. Blair, Basil Blewett, Brian Mullally.

M.B., B.Ch., B.A.O.—C. G. Alexander, S. A. Agnew, Elizabeth F. Bennett, J. B. Bowden, W. A. Boyd, C. F. Brennan, T. D. Brown, J. M. R. Campbell, Janet C. Davidson, P. J. Devlin, D. A. Elliott, N. P. Ellison, Patricia E. Ferguson, A. G. Fullerton, W. J. Glover, Ferdinand Hillman, S. R. A. Hogg, Thomas Horner, D. W. Ingram, D. H. Johnston, Arthur Jones, Dorothea Kelso, Mea W. Kelso, W. J. Kernohan, Frances E. W. Kinnaird, A. L. Kirkland, Harold Korentager, R. S. Lindsay, Doreen E. Linton, C. R. Locker, J. C. H. Loughridge, M. J. Lyons, W. T. E. McCaughey, Ephraim McFall, M. J. McKenna, Edith M. McKinney, A. G. McKnight, Frances M. McQuitty, W. N. McWilliam, R. G. S. Malone, V. J. Marmion, J. E. H. Mercer, N. G. Metrustry, H. A. Millar, George Moles, M. H. Moles, Sean Moore, J. F. O'Sullivan, G. C. Patterson, J. N. Patterson, A. C. C. Pinion, Norah I. Rottger, J. L. Russell, I. McC. Todd, Mary Uprichard, W. G. Wade, J. A. Weaver, C. R. Whitfield, J. S. Willman, Sheila M. Wilson, H. G. Wright, Sandra Wylie.

C.P.H.—A. C. Darrah, R. Logan, F. V. Maclaine, S. H. Moore, P. N. Newsam, W. T. Orton, W. J. Patterson, J. Simpson, E. M. Wells.

Order of St. John of Jerusalem

The King has sanctioned the following promotions in, and appointments to, this order:

As Knight.—C. Gardiner-Hill, M.B.

As Commanders.—E. P. Scott, M.B., R. V. S. Cooper, M.B., W. B. Fox, M.B., J. R. Hanna, M.B., C. S. C. Prance, M.B., N. S. B. Vinter, M.B., E. M. Humphery, M.B., Colonel K. B. Fraser, M.B.

As Associate Commanders.—Major S. K. Engineer, F.R.C.P.E.

As Officers.—S. I. A. Laidlaw, M.D., B. LaHaye, M.D., C. H. Vernon, F.R.C.S., B. L. Steele, M.R.C.S., C. E. H. Gater, L.R.C.P.E., H. E. Thomas, M.B., L. G. Norman, M.D.

As Associate Officers.—B. B. Rai, M.B., K. B. M. S. Mahmood, M.B., Lieut.-Colonel P. M. Petigara, M.B., Miss B. Rose, M.B.

Royal College of Surgeons in Ireland

The president and council of the college invite the submission of essays before Feb. 1, 1952, for the Carmichael prizes (£150 and £100.)

According to Mr. Carmichael's will the essays should deal with the improvement of the medical profession, "with the view of rendering it more useful to the public, and a more respectable body than it is at present." The authors are also asked to consider the preliminary and moral education of medical and surgical students, as well as the mode of conducting their professional studies. Mr. Carmichael also wished the authors to consider "the most practical mode of rendering the qualifying examination as demonstrative as possible."

Further particulars may be had from the registrar of the college, Dublin.

Faculty of Radiologists

The faculty is holding a weekend postgraduate course at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, on Feb. 17 and 18. Applications for enrolment should be sent to the secretary of the faculty, 45, Lincoln's Inn Fields, W.C.2.

Harveian Society of London

The Buckston Browne prize for 1950 has been awarded to Dr. C. J. Gavey, F.R.C.P., for his essay on the Management of the Hopeless Case.

King Edward's Hospital Fund for London

The Fund has received a further instalment of £100,000 from the Nuffield Trust for the Special Areas. Lord Nuffield provided that loans repaid to this trust should pass to King Edward's Hospital Fund. In all £1,350,000 has now been received.

The King has sent his annual subscription of £1000 for 1951 to the Fund.

Prison Medical Services

Dr. H. K. Snell, principal medical officer of Wormwood Scrubs Prison, has been appointed to be director of Prison Medical Services in succession to Dr. H. T. P. Young, who retired on Dec. 31.

Dr. Snell qualified from King's College Hospital in 1921 and after holding house-appointments there took his M.B. Lond. in 1924, and his M.D. three years later. He has served as medical officer at Wandsworth and Parkhurst prisons and at Broadmoor asylum. His published work includes papers on the influence of war on drunkenness and attempted suicide.

Society of Chemical Industry

The 70th annual general meeting of this society will be held in London from July 9 to 13, at the Imperial College of Science and Technology, South Kensington.

Empire Rheumatism Council

Lord Horder, will take the chair at the annual general meeting of the council to be held at 41, Portland Place, London, W.1, on Wednesday, Jan. 24, at 6 p.m.

St. John Ambulance Brigade

Mr. Frank Edwards, F.R.C.S.E., of Shrewsbury, has been appointed surgeon-in-chief of the brigade in succession to Dr. Corbet Fletcher, of Hampstead, who has resigned. Dr. Marcus Scott, of Newington Causeway, London, succeeds Mr. Edwards as deputy surgeon-in-chief.

Institute of Hospital Administrators

The address of this institute and of its journal the *Hospital* is 75, Portland Place, London, W.1.

Irish Gerontological Society

This society was founded on Dec. 6. The following officers were elected: president, Prof. W. J. E. Jessop; secretary, Dr. John Fleetwood; treasurer, Dr. Paul Holland. The secretary may be addressed at the department of physiology, Royal College of Surgeons, Dublin.

Community Mental Health

Dr. Russell Brain, F.R.C.P., will open the conference on Community Mental Health in Practice which the National Association for Mental Health is holding at St. Pancras Town Hall, London, W.C.1, from March 12 to 13. Other speakers will include Dr. T. A. Ratcliffe, Dr. Fanny Wride, Dr. Mary Capes, Dr. T. M. Ling, Dr. Roger Tredgold, Dr. Felix Post, and Dr. J. W. Affleck. Further information may be had from the conference secretary, 39, Queen Anne Street, W.1.

Volunteers for a Cold

The Common Cold Research Unit at Harvard Hospital, Salisbury, needs more volunteers urgently because the island experiment, described in our columns last week, has given new ideas for studying the transfer of natural colds. The unit is also trying to find out why school-children play such an important rôle in the spread of the common cold.

Since the experiments at Salisbury started in 1946 over 2000 volunteers have visited the unit; some of them have paid as many as four visits. But more volunteers, aged 18–40, are still needed. They are offered 10 days' holiday with free travel warrant and pocket-money. Applications should be sent to the medical officer, Harvard Hospital, Salisbury.

Births, Marriages, and Deaths

BIRTHS

BROWNE.—On Dec. 25, at Newcastle upon Tyne, the wife of Prof. R. C. Browne—a daughter.

FRENCH.—On Dec. 31, in Oxford, the wife of Dr. John French—a son.

HABIBIS.—On Dec. 23, in London, to Dr. Stella Murray, wife of Dr. H. S. Habibis—a son.

SEARS.—On Dec. 31, in London, to Dr. Janet Sears (née Conn), wife of Dr. H. T. N. Sears—a daughter.

STONES.—On Jan. 6, in Liverpool, the wife of Dr. P. B. Stones—a son.

MARRIAGES

HEWITT—JAGO.—On Jan. 9, in London, Douglas Hewitt, M.A., to Margaret Jago, M.B.

DEATHS

CAMPBELL.—On Jan. 3, at Dundee, Peter Campbell, M.B. Edin., aged 94.

CATHCART.—On Jan. 4, at Broadstairs, George Clark Cathcart, M.A., M.D. Edin., aged 90.

CLARK.—On Jan. 1, Agnes Catherine Clark, M.B. Camb., D.A.

GREENWOOD.—On Jan. 3, at Darlington, Alan Young Greenwood, M.D. Edin.

HARDY.—On Jan. 4, at Weybridge, Surrey, Francis Alexander Hardy, M.D. Edin., aged 78.

LLOYD.—On Jan. 4, at Milford-on-Sea, Hants, Robert Archer Lloyd, D.S.O., M.D. Lond., lieut.-colonel, I.M.S. retd, aged 72.

MAYNARD.—On Jan. 6, in London, Edwin Maynard, M.D. Durh., F.R.C.S., D.P.H.

PITT.—On Jan. 3, in London, Clive Nelson Pitt, M.B. Sydney.

SANSOM.—On Jan. 6, at St. Leonards, Sussex, Charles Lane Sansom, C.M.G., F.R.C.S.E., D.P.H., Kt. of Order of Isabella Catolica of Spain, aged 88.

SANSOM.—On Jan 2, John Raymond Eden Sansom, M.B. Brist., aged 54.

WEST.—On Jan. 1, at Budleigh Salterton, Charles Ernest West, B.A. Oxfd, F.R.C.S., aged 77.

Society for the Study of Fertility

The second annual conference of this society will be held at Girton College, Cambridge, on June 20 and 21. Further particulars may be had from the secretary, Dr. G. I. M. Swyer, University College Hospital Medical School, London, W.C.1.

Films on Child Health

Prof. A. V. Neale will take the chair at a meeting of the medical committee of the Scientific Film Association on Jan. 15 at 5 P.M., at 1, Wimpole Street, London, W.1, when some films on child health will be shown and discussed.

In our advertisement columns application is invited for the post of junior assistant editor of THE LANCET.

At the invitation of the Postgraduate Federations of Australia and New Zealand Dr. William Pickles, of Aysgarth, is to give a series of lectures in these countries. He is leaving on Jan. 19 and will be away until late June.

Diary of the Week

JAN. 14 TO 20

Monday, 15th

HUNTERIAN SOCIETY
8.30 P.M. (Mansion House, E.C.4.) Prof. F. Orban (Liége): Arteriographic Approach to the Study of Arteritis.

UNIVERSITY OF DURHAM
5.15 P.M. (Royal Victoria Infirmary, Newcastle upon Tyne.) Prof. J. Z. Young, F.R.S.: Experiments in Learning. (Rutherford Morison lecture.)

Tuesday, 16th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene, Keppel Street, W.C.1.) Prof. Henry Barcroft: Circulation in the Human Limbs.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5 P.M. Dr. M. S. Thomson: Zoonoses (Parasitic Infections).

EUGENICS SOCIETY
5.30 P.M. (Burlington House, Piccadilly, W.1.) Dr. C. O. Carter: Congenital Malformations.

SOCIETY FOR THE STUDY OF ADDICTION
4 P.M. (11, Chandos Street, W.1.) Dr. J. A. Hobson: Clinical Experiences in the Treatment of Alcoholism.

Wednesday, 17th

INSTITUTE OF DERMATOLOGY
5 P.M. Dr. R. W. Riddell: Medical Mycology.

ROYAL MICROSCOPICAL SOCIETY, Tavistock House South, Tavistock Square, W.C.1
6 P.M. Dr. G. M. Findlay: The Virus and the Cell.

HARVEIAN SOCIETY OF LONDON, 11, Chandos Street, W.1
8.45 P.M. Dr. R. R. Trail: Continuing Problem of Phthisis.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH
8.30 P.M. (Royal College of Surgeons, 18, Nicolson Street, Edinburgh.) Prof. E. F. Finch: Approach to Specialism.

Thursday, 18th

UNIVERSITY COLLEGE, Gower Street, W.C.1
5.15 P.M. Mr. F. Bergel, D.SC.: Physico-chemical Properties and Pharmacological Activity of Drugs. (First of two lectures.)

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. Dr. G. D. Dawson: Cerebral Responses to Peripheral Stimuli in Man.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, S.W.1
4.30 P.M. Dr. Denis Williams: Neurology lecture-demonstration.

FACULTY OF RADIOLOGISTS
8.15 P.M. (32, Welbeck Street, W.1.) Dr. W. St. C. Symmers, Dr. R. Bodley Scott, Dr. F. Campbell Golding: The Reticuloses.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, W.1
7.30 P.M. Prof. René Mouchet: The Work of the "Foreami" (Fonds Reine Elisabeth pour l'Assistance Médicale aux Indigènes) in the Belgian Congo.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Mr. J. A. Shepherd: Inguinal Hernia.

Friday, 19th

FACULTY OF RADIOLOGISTS
10.30 A.M. (1, Wimpole Street, W.1.) Dr. Brian Russell, Prof. R. McWhirter, Dr. D. G. Galton, Dr. J. D. N. Nabarro, Dr. John Boland: The Reticuloses.
2.15 P.M. (Royal College of Surgeons, Lincoln's Inn Fields, W.C.2.) Dr. W. M. Levitt, Dr. Gwen Hilton, Dr. Geoffrey Boden: The Reticuloses.

MEDICAL WOMEN'S FEDERATION
8.30 P.M. (Royal Free Hospital School of Medicine, W.C.1.) Mr. L. L. Whytehead: Recent Developments in Cardiac Surgery at Guy's Hospital.

Saturday, 20th

SOUTH-EAST METROPOLITAN REGIONAL TUBERCULOSIS SOCIETY
10.30 A.M. (Chest Clinic, Town Hall, Walworth Road, S.E.17.) Dr. W. G. Tillman: Tuberculous Conditions of the Skin. Dr. King Turner: Oral Conditions in Pulmonary Tuberculosis. Dr. E. K. Pritchard: Domiciliary Treatment of Pulmonary Tuberculosis.

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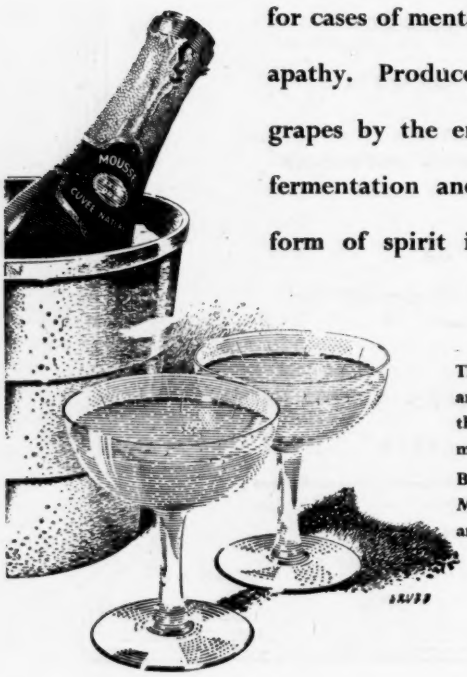

The Baby bottle (one glass size) is both adequate and economical. It ensures that the patient gets the benefit of Moussec always in its freshest, most sparkling form.

Baby Moussec is obtainable from all Wine Merchants and Licensed Grocers at 2/2. There are also larger sizes at 4/3, 8/9 and 16/6.

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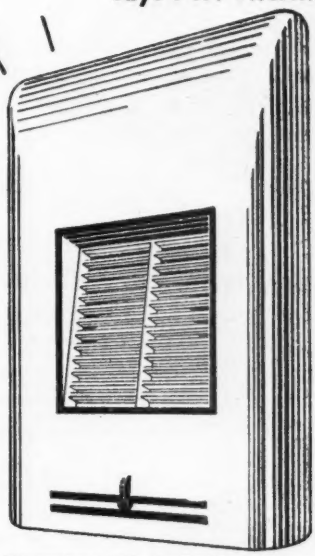
Gas burnt in Mr. Therm's gas-heated appliances never produces the slightest smut or smoke. It is so clean in operation that gas equipment is kept hard at it with complete success in many places where surgical cleanliness is essential; and the maintenance of equipment is confined to an easily handled minimum. The other advantages of gas as a fuel — flexibility, ease of control, rapid heating from cold and high efficiency — are so well known that Mr. Therm's face is familiar all over Britain.



The modern gas fire is a healthy and economical way of providing supplementary local heating. The latest gas fires have silent burners that never 'light back' and new-type radiants that are almost unbreakable.

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CLINITEST one-minute tablet test

REGD TRADE MARK

for detecting urine-sugar

Approved by the Medical Advisory Committee of the Diabetic Association

Doctors and diabetic patients appreciate the advantages of this convenient tablet method for detecting urine-sugar. Based on the same principles as the Benedict Test, 'Clinitest' provides a copper-reduction test with all reagents compressed in a single tablet.

NO EXTERNAL HEAT REQUIRED. The heat is self-generated by the tablet.

SIMPLICITY. There are three simple steps. Place five drops of urine in a test tube, add ten drops of water. Drop one 'Clinitest' tablet into the solution and allow thirty seconds for reaction. Then compare with colour scale.

SPEEDY—DEPENDABLE. The test takes less than one minute, but the sensitivity and reliability are equal to the other standard qualitative copper-reduction tests.

CONVENIENT—PRACTICAL. All essentials fit into a small pocket-sized container.

NEW PRICES TO THE PUBLIC

Complete Set, *including 36 tablets* - 10/-

Refill Bottles (*36 tablets*) - - 3/6

Supplies are now available through most good-class chemists or from the Sole Distributors, from whom full information and medical literature can be obtained.

'CLINITEST' and the N.H.S.

'Clinitest' sets and refill bottles of tablets comply with the official specifications for appliances and reagents for urine sugar analysis which may be prescribed on Form EC10.

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CIMLAC GAUZE

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GRAVITATIONAL AND TROPHIC ULCERS

In long-standing cases of gravitational and trophic ulcers, Cimlac Gauze will be found a valuable treatment to promote regeneration of devitalized tissues and to control infection due to the presence of Ps. Pyocyanea and B. Proteus, which are very often causative factors of delayed healing.

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Samples and literature gladly sent on request.

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The only Brandy bottled at the Chateau de Cognac

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INFANT FEEDING

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gastro-intestinal upsets

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Here's metal more attractive

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IRON in readily assimilable form is the metal so vital for the successful treatment of hypochromic anæmias.

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'PLASTULES' are available in four varieties: Plain; with Liver Extract; with Folic Acid; and with Hog's Stomach.

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In a sparking plug, the most important part is its insulator, and "Sinkon" insulation, exclusive to LODGE, is THE BEST IN THE WORLD

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The experts' choice

Lodge Plugs Ltd., Rugby, England

Why these strained foods can be recommended with confidence for infants of 3-4 months and onwards

IT IS NOW ACCEPTED that strained foods should be introduced into an infant's diet when the weight reaches 15 lbs.

These foods are prepared in the Heinz kitchens by a method that makes them *more valuable*, from the nutritional standpoint, than the strained foods that a mother can prepare at home.

A mother, however careful, is likely to lose valuable nutrients by cooking in open saucepans, and by over-cooking. Instead of sieving she often mashes the foods, leaving indigestible lumps.

The vegetables and fruits in Heinz Strained Foods are grown in the famous market garden area of Ormskirk, near to their Standish factory. The foods are cooked by the methods that retain their maximum nutritional value, and sieved to the correct consistency for the infant's digestion and bowel.

In fact, the preparation of strained foods for infants is a specialist job that is best done by specialists.

Samples and literature will be sent on request.

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SOLUTION TRADE MARK

For the Storage and Sterilisation of Surgical Instruments, Hypodermic Needles, etc.

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Tests over 18 months show that Steribac completely prevents the formation of rust on steel. In addition, bacteriological tests show that 10 minutes' contact with Steribac destroys both B. Coli and Staphylococcus Aureus

20 oz. bottles 3/- ; 80 oz. bottles 10/-

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Intermittent Venous Occlusion Apparatus

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SILENT, PORTABLE, INEXPENSIVE

Descriptive Pamphlet on application

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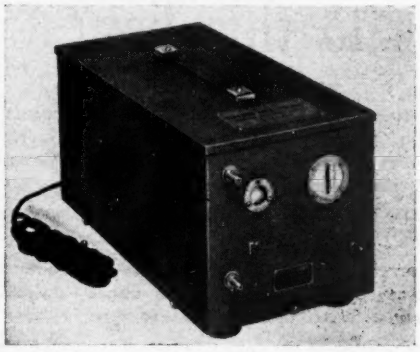

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PHILIPS DX3 FOUR-VALVE DIAGNOSTIC UNIT

This four-valve diagnostic unit by Philips positively compels attention. Its fine engineering features, its guaranteed performance and proved reliability place it unmistakably in the *distinguished* class. Proof that in the 'DX3' progressive radiological opinion has been very well interpreted is evident from the enthusiasm with which it has been received. Users praise the linear kV scale of which the reading remains valid irrespective of the load. They like, also, the electronic timer, the completely independent choice of mA and exposure times, and the precision now possible with repetitive techniques by the introduction of mains frequency compensation. They endorse, too, the 'Quantic' automatic control which exercises constant vigilance in the 'safe maximum' region and protects the tube against overload. The 'DX3' is of medium output — 100 kVp and up to 300 mA fitted with oil immersed valves and arranged for two tubes — stationary or rotating anode.

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It is our business, at Intalok, to make mattresses for hospitals. We, like any manufacturer who attempts to supply the medical world with its equipment, must know, down to the last detail, what the medical world needs.

This list of points sums up what fifty hospitals have told us they need from us.

1 Correct support. The patient, unless otherwise required, should be supported so that the spine is straight — the position most restful and relaxing and helpful to recovery.

2 Prevention of chafing. The springing must not flatten the fleshy parts of the body.

3 Prevention of bed fatigue. There must be full support where the body is heaviest; no sagging; less tendency for the body to slip.

4 Variable construction. Special cases call for mattresses varying in thickness or part mattresses for "Fowler" type and other adjustable beds.

5 Easy sterilization. All metal parts must be rustless and fit for repeated sterilization.

6 Satisfactory stoving. Springs must be of a type whose life is lengthened by frequent stoving.

7 No tufts or piping. These can collect dust and germs.

8 Removable ticking. To be easily slipped off and laundered.

9 Facilities for re-using Hospital's own materials: good hair from existing mattresses being employed again with Intalok spring centre.

10 An Extensive Guarantee. Every Intalok Spring unit is guaranteed for 10 years.

11 ?

Do you think our knowledge is complete?

If you know of some need that your experience tells you is not being supplied by Intalok Mattresses or the Intalok Service we shall make it our business to produce the right answer to fill that need — whatever it costs in research and experiment.

NOTE: A list of hospitals now using Intalok Mattresses will be supplied confidentially to buying authorities who care to apply. Please write to INTALOK, LTD., Leicester Road, Nuneaton.

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In your plans for your child's education and career life assurance can be a real help. Write today for a copy of the New "Career Policy" leaflet to

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A Private Home for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive secluded grounds. Fees from 10 guineas per week inclusive. Patients treated under Certificate, Temporary or Voluntary status. Modern forms of treatment, including psychotherapy, narco-analysis, modified insulin, occupational therapy, E.C.T., etc.

Separate house in six acres of grounds nearby for convalescent patients. DOUGLAS MACAULAY, M.D., D.P.M.

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A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Six acres of ground, facing Finsbury Park. Voluntary and Temporary Patients received without certification. **Insulin Coma Unit.** E.C.T. Group Psychotherapy. Trained Resident and Visiting Staff.

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On the Cotswold Hills, seven miles from Cheltenham, Stroud and Gloucester, equipped for the treatment of Pulmonary Tuberculosis.

Terms from £9 15s. 6d. per week

Full particulars from SECRETARY, COTSWOLD SANATORIUM, CRANHAM, GLOUCESTER.

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ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of thi ıbranch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres In the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach

There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 537

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For treatment of

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Beautifully situated country mansion in Warwickshire
Extensive grounds for the therapeutic occupations

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A PRIVATE HOME, in quiet and pleasant grounds, for the reception of Ladies and Gentlemen suffering from nervous and mental disturbance. All forms of modern treatment. Reasonable fees. Out-patient facilities. Apply to Physician-Superintendent.

CHEADLE ROYAL CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

The object of this Hospital is to provide the most efficient means for the treatment and care of patients of both sexes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by Trustees

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For Prospectus and list of tutors apply to Dr. G. E. OATES, University Examination Postal Institution, 17, Red Lion-square, London, W.C.1 (Phone HOLborn 6313).

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FINAL EXAMINATION: SURGERY, 12th February, 12th March, 9th April, 1951. MEDICINE, PATHOLOGY, 19th February, 19th March, 16th April, 1951. MIDWIFERY, 20th February, 20th March, 17th April, 1951. MASTERY OF MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, July and December.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS

58, Queen Anne-street, London, W.1

EXAMINATION FOR THE MEMBERSHIP

The next examination for the Membership (M.R.C.O.G.) will be held in JULY, 1951. The paper will be written in London, Belfast, Glasgow, and Sheffield on Tuesday, 3rd July, and Wednesday, 4th July, and the clinical and oral examinations will be held in London commencing on Monday, 23rd July.

Candidates who have completed the resident appointments as required by the Regulations should apply for entry to this examination (on the prescribed form obtainable from the Secretary) not later than Thursday, 25th January. Candidates whose applications are accepted must submit case-records, &c., as required by the Regulations, not later than Thursday, 1st March. Case-records must be accepted before the candidates proceed to the Examination.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS

58, Queen Anne-street, London, W.1

EXAMINATION FOR THE DIPLOMA IN OBSTETRICS

The next examination for the Diploma in Obstetrics (D.Obst. R.C.O.G.) will be held in APRIL, 1951. The paper will be written in London, Dublin, Edinburgh, and Sheffield on Tuesday, 3rd April, and the clinical and oral examinations will be held in London commencing on Tuesday, 17th April.

Application for entrance to the examination (on the prescribed form obtainable from the Secretary) must be made not later than Thursday, 1st February.

The examination fee is £10 10s. and successful candidates will be required to pay a fee of £5 5s. before being granted the Diploma in Obstetrics of the College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

RESEARCH FELLOWSHIP

A Laming Evans Research Fellowship will shortly be awarded by the Royal College of Surgeons of England.

The Fellowship is of the annual value of about £600, tenable for 1 year in the first instance, but renewable up to 3 years at the discretion of the Council.

Fellows may be Male or Female, and must hold a medical qualification registrable in the United Kingdom or a university degree (not necessarily medical).

Fellows must devote themselves to research in orthopædic surgery.

Applications should state where it is proposed to carry out the research and whether it is desired that the College should provide facilities.

Applications, stating the nature of the proposed research and accompanied by a recommendation from a member of the staff of the applicant's Medical School or University, should be sent to the Secretary, Royal College of Surgeons, Lincoln's Inn-fields, W.C.2, on or before 12th March, 1951.

KENNEDY CASSELS, Secretary.

COURSE IN THERAPEUTICS

IN THE INSTITUTE OF ORTHOPÆDICS
15TH TO 24TH FEBRUARY, 1951

Thursday, 15th February, Great Portland-street

10.00 A.M.	Rest	Mr. H. J. BURROWS
11.15 A.M.	Posture	Dr. J. JOSEPH
12.45 P.M.	Lunch	
2.00 P.M.	Movement	Mr. H. J. BURROWS
3.00 P.M.	Principles of appliances	Mr. A. T. FRIPP
4.00 P.M.	Tea	

Friday, 16th February, Great Portland-street

10.00 A.M.	Postural exercises	Miss M. MACMURRAY
11.00 A.M.	Electrical treatment of muscle	Mr. H. J. SEDDON
12.45 P.M.	Lunch	
2.00 P.M.	Clinical demonstration	Mr. H. J. SEDDON
4.00 P.M.	Tea	

Saturday, 17th February, Great Portland-street

10.00 A.M.	Manipulation	Mr. H. J. BURROWS
11.15 A.M.	Demonstration of appliances	Mr. W. TUCK

Monday, 19th February, Country Branch, Stanmore

10.00 A.M.	Bed apparatus	Mr. F. J. HEDDEN
11.30 A.M.	Pool and slings	Miss L. M. PRIOR
12.45 P.M.	Lunch	
1.30 P.M.	Plaster of Paris	Miss DONLAN and Mr. CHOLMELY
2.45 P.M.	Workshops	Mr. W. TUCK
3.15 P.M.	Plastic splints	Dr. J. T. SCALES
4.00 P.M.	Tea	

Tuesday, 20th February, Country Branch, Stanmore

10.00 A.M.	Chemotherapy	Dr. C. H. LACK Dr. F. H. STEVENSON
11.30 A.M.	Cold abscesses and sinuses	Mr. F. J. HEDDEN
12.45 P.M.	Lunch	
1.45 P.M.	Clinical demonstration	Mr. F. J. HEDDEN
4.00 P.M.	Tea	

Wednesday, 21st February, Great Portland-street

10.00 A.M.	Arthrodesis	Mr. J. I. P. JAMES
11.30 A.M.	Arthrodesis	Mr. J. I. P. JAMES
12.45 P.M.	Lunch	
2.30 P.M.	Tendon and muscle transfer	Mr. D. M. BROOKS
4.00 P.M.	Tea	

Thursday, 22nd February, Great Portland-street

10.00 A.M.	Nerve repair	Mr. H. J. SEDDON
11.30 A.M.	Nerve repair	Mr. H. J. SEDDON
12.45 P.M.	Lunch	
2.00 P.M.	Tendon repair	Mr. J. I. P. JAMES

Friday, 23rd February, Great Portland-street

10.00 A.M.	Limb equalisation	Mr. J. I. P. JAMES
11.15 A.M.	Arthroplasty	Mr. K. I. NISSEN
12.45 P.M.	Lunch	
2.00 P.M.	Chronic osteomyelitis	
3.00 P.M.	The effect of hormones in the treatment of osteoporosis	Dr. J. R. NASSIM

Saturday, 24th February, Country Branch, Stanmore

10.00 A.M.	Ward round	Mr. K. I. NISSEN

The fee for the course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean, 234, Great Portland-street, London, W.1.

UNIVERSITY OF LONDON. The Senate invite applications for the READERSHIP IN ANATOMY tenable at St. Bartholomew's Hospital Medical College. Salary £1200–£1800 p.a.

Applications (10 copies) must be received not later than 21st February, 1951, by the Academic Registrar, University of London, Senate House, W.C.1, from whom further particulars should be obtained.

THE UNIVERSITY OF MANCHESTER

FACULTY OF MEDICINE

The Faculty of Medicine, in conjunction with the St. Mary's Hospitals for Women and Children, proposes to conduct a POSTGRADUATE COURSE IN OBSTETRICS, especially intended for general practitioners. The course is to comprise 12 weekly meetings to be held on WEDNESDAYS from 10.0 A.M.–4.0 P.M. commencing on 24TH JANUARY and concluding on 11TH APRIL. The fee for the course is 7 guineas, though doctors taking part in the National Health Service may be able to claim the fee and travelling expenses from the Ministry of Health.

Applications should be made to the Dean of Postgraduate Medical Studies not later than 17th January, 1951.

THE UNIVERSITY OF MANCHESTER

DEPARTMENT OF CHILD HEALTH

COW AND GATE FELLOWSHIP

Applications are invited for the above Fellowship, normally of the value of £900 p.a., tenable in the University and available for research into problems associated with nutrition in infants and children.

Regulations governing the award of the Fellowship may be obtained from the Registrar, the University, Manchester, 13, to whom all applications should be sent not later than 31st January, 1951.

UNIVERSITY OF LONDON

BRITISH POSTGRADUATE MEDICAL FEDERATION

THE INSTITUTE OF LARYNGOLOGY AND OTOLOGY

330–332, Gray's Inn-road, London, W.C.1

ADVANCED REVISION COURSE FOR M.S. AND FINAL F.R.C.S. STUDENTS

Commences on 12TH FEBRUARY, 1951

The Course has been arranged as a part-time one in order to meet the circumstances of students holding appointments. It runs for 10 weeks and the fee is £21.

A detailed syllabus is obtainable from the Dean.

MIDDLESEX HOSPITAL MEDICAL SCHOOL

PRIMARY F.R.C.S.

A Course of Instruction in preparation for the Primary Fellowship Examination will commence on 10TH APRIL, 1951, and will continue until approximately the date of the Examination in mid-July, 1951.

The fee for the course is 25 guineas.

Forms of application for admission may be obtained from the Medical School Secretary, Middlesex Hospital, W.1.

UNIVERSITY OF OXFORD. Department of Anatomy. Applications are invited for a vacancy in Neurological Research combined with part-time demonstrating in anatomy. Salary in accordance with age and experience.

In applying for further details, applicants should state their qualifications. W. E. LE GROS CLARK.

THE UNIVERSITY OF LEEDS. Department of Physiology. Applications are invited for a LECTURESHIP IN PHYSIOLOGY either on salary scale £800–£100–£1300 if medically qualified, or £550–£50–£1100 if not medically qualified.

Applications, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 31st January, 1951.

THE UNIVERSITY OF MANCHESTER. Chair of Dental SURGERY. Applications are invited for the full-time Professorship of Dental Surgery. The University is prepared to consider candidates with experience and qualifications in any branch of dentistry. Salary not less than £2250 p.a., with membership of the F.S.S.U. Duties to begin on a date to be arranged.

Applications should be submitted not later than 28th February, 1951, to the Registrar, The University, Manchester, 13, from whom further particulars may be obtained.

W. MANSFIELD COOPER, Registrar.

UNIVERSITY OF GLASGOW. Applications are invited for appointment to a SENIOR LECTURESHIP in Experimental Pharmacology. A medical qualification is not essential. Salary scale £1500–£1800 for medically qualified, £1150–£1400 for non-medically qualified. Initial salary according to experience and qualifications. F.S.S.U. and family allowance.

Applications (6 copies) should be lodged not later than 31st March, 1951, with the undersigned, from whom further particulars may be obtained. ROBT. T. HUTCHESON,
Secretary of University Court.

WEST RIDING COUNTY COUNCIL. Lady Mabel COLLEGE OF PHYSICAL EDUCATION, WENTWORTH WOODHOUSE, ROTHERHAM, YORKSHIRE. Required in September, 1951, LECTURER IN PHYSIOLOGY, to be responsible for the teaching of the subject, and to give assistance in the teaching of anatomy. Salary will be in accordance with the scale of salaries for teaching staffs of training colleges.

Application should be made as soon as possible to the Principal, from whom further particulars may be obtained.

UNIVERSITY OF OTAGO, Dunedin, New Zealand. Applications are invited for the position of SENIOR LECTURER IN BACTERIOLOGY. Applicants should have special qualifications in medical bacteriology. Salary scale £1450–£75–£1750 (N.Z.).

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications is 28th February, 1951.

SOUTH OAKS, a 229-Bed Psychiatric Hospital, environs New York City, has vacancy 2 FELLOWSHIPS IN PSYCHIATRY. $3000 per year, with full maintenance.

Apply M. S. TITLEY, M.D., Sunrise Highway, Amityville, New York.

Hospital Services : Senior Appointments

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. The Board of Governors of this teaching hospital group will proceed shortly to the appointment of CHIEF BIOCHEMIST in charge of the Endocrine Laboratory at Chelsea Hospital for Women. Applications are invited from suitably qualified medical or non-medical steroid chemists and the successful candidate will be required to advise the Board upon the lay-out and equipment required in the laboratory. The salary for a medical man may be within the range for consultants set out in the terms and conditions of service of hospital medical and dental staffs, whilst that for a non-medical man will be within the range of £1500–£1800 p.a. The successful candidate will be responsible to the Board's Consultant in endocrinology, and through him to the Board of Governors or such Committee as they may appoint.

Applications should be sent to the undersigned, giving full details of academic qualifications and professional experience, age, nationality, together with the names of 3 persons to whom reference may be made, not later than 1 month after the publication of this advertisement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the appointment of a Whole-time CONSULTANT ANÆSTHETIST to the Lambeth group of hospitals. Duties will be mainly at Lambeth Hospital, where there is a considerable amount of emergency surgery, and where there are, at present, 2 whole-time Anæsthetic Registrars employed, in addition to sessions carried out by part-time Consultants. The successful candidate would be required to take charge of, and organise, the anæsthetic sessions at this Hospital and at the South Western Hospital. The appointment will be subject to the provisions of the National Health Service (Superannuation) Regulations, 1950, and in accordance with the agreed terms and conditions of service of hospital medical and dental staffs under the National Health Service.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment, and giving the names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive not later than 27th January, 1951. Canvassing will disqualify, but applicants are not precluded from visiting the hospitals.

For appointment of Orthopædic and Traumatic Surgeon (Consultant) at Finchley Memorial Hospital, See St. Albans City Hospital advertisement in Provincial section.

Provincial

BARNET GENERAL HOSPITAL. Wellhouse-lane, Barnet, HERTS. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the appointment of Whole-time ASSISTANT PHYSICIAN (Geriatrician) to be responsible for the care of the chronic sick at the above Hospital and annexes, amounting to approximately 120 Beds in addition to outpatients. Applicants should have special interest and experience in the care of the aged, and possession of a higher qualification in medicine is desirable. The terms and conditions of service for hospital medical and dental staffs will apply to the post, and salary will be on the scale of £1300–£1750 p.a.

Applications, stating date of birth, qualifications, and experience, with the names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 27th January, 1951. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct appointment with the Medical Superintendent of the Hospital.

DARTFORD, KENT. DARENTH PARK. South East METROPOLITAN REGIONAL HOSPITAL BOARD invite applications to fill a vacancy for a Whole-time CONSULTANT PSYCHIATRIST at above Hospital for the training of mental defectives. Candidates should possess a D.P.M. and preferably a higher qualification ; mental defective experience is essential. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Apply, stating nationality, age, sex, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1. The last day for acceptance of applications will be 26th January, 1951, and selected candidates will be interviewed in London on 1st March, 1951. Canvassing of members of the Board or the Advisory Appointments Committee will disqualify, but applicants may visit the Hospital.

HITCHIN GROUP OF HOSPITALS AND ST. ALBANS CITY HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the part-time appointment of PHYSICIAN (Geriatrician) to organise and undertake the geriatric services at the above hospitals for 5 half-days per week. Applicants should possess a higher medical qualification and have special interest and experience in the care of the aged. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with the names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 27th January, 1951. Canvassing will disqualify, but candidates are invited to visit the hospitals by direct appointment with the Secretary, Luton and Hitchin Group Hospital Management Committee, Luton and Dunstable Hospital, Dunstable-road, Luton, Beds, for the Hitchin group, and to the Secretary, Mid Herts Group Hospital Management Committee, St. Albans City Hospital (Osterhills Unit), Normandy-road, St. Albans, Herts, for St. Albans City Hospital.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of a Part-time CONSULTANT in Ophthalmology (6 sessions per week). The duties, which will include consultative work in connection with the School Eye Service, will be mainly in hospitals in the Leeds A group. The Outpatient Department is at the Public Dispensary and Hospital, Leeds, and facilities for inpatients will be provided at St. James's Hospital, Leeds. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the remuneration will be in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of a Part-time CONSULTANT in Orthopædic Surgery (9 sessions per week) for duties mainly at hospitals within the No. 15 (Bradford A) Hospital Management Committee group together with additional duties at hospitals within the No. 10 (Wakefield B) and No. 19 (Ilkley and Otley) Hospital Management Committee groups. The person appointed will be required to reside in or near Bradford. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the remuneration will be in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the post of Whole-time PSYCHIATRIST (Senior Hospital Medical Officer grade) for duties at the following hospitals :—

(*a*) Menston Hospital, Menston, near Leeds. A small self-contained flat at the Hospital is available for a married person.

(*b*) Stanley Royd Hospital, Wakefield. Accommodation is available for a single person.

The appointments will be subject to the National Health Service (Superannuation) Regulations, 1950, and the remuneration will be in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of a Whole-time ASSISTANT CLINICAL PATHOLOGIST (Consultant grade) for duties mainly at the Kingston General Hospital and the Western General Hospital, Hull, and additional duties as may be required at other hospitals in the Hull A and Hull B Hospital Management Committee groups. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the remuneration will be in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following appointments :—

(*a*) Consultant ANÆSTHETIST for duties mainly at hospitals with the No. 13 (Huddersfield) Hospital Management Committee group, together with additional duties at hospitals within the No. 12 (Storthes Hall) Hospital Management Committee group. The person appointed will be required to reside in or near Huddersfield.

(*b*) Consultant ANÆSTHETIST for duties mainly with the Genito-urinary Unit at the Bradford Royal Infirmary and additional duties as may be required in other hospitals in the No. 15 (Bradford A) and No. 16 (Bradford B) Hospital Management Committee groups. The person appointed will be required to reside in or near Bradford.

(*c*) Consultant ANÆSTHETIST for duties at hospitals within the No. 4 (Hull A), No. 5 (Hull B), and No. 6 (East Riding) Hospital Management Committee groups. The person appointed will be required to reside in or near Beverley.

Candidates for the appointments should have wide experience in anæsthetics and have held the D.A. for at least 4 years. The appointments will be part-time (9 half-days per week) and subject to the National Health Service (Superannuation) Regulations, 1950. The remuneration will be in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the undersigned not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

WM. A. SHEE, Secretary to the Board.

29/31, Eastgate, Leeds, 2.

MANCHESTER. UNITED MANCHESTER HOSPITALS. Applications invited for posts of 2 SENIOR HOSPITAL MEDICAL OFFICERS (full-time) tenable at the Manchester Royal Eye Hospital. Salary according to scale.

Applications should be forwarded to the undersigned immediately, and should contain the names of 3 referees to whom reference may be made.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time, non-resident post of ASSISTANT RADIOTHERAPIST, Christie Hospital and Holt Radium Institute, Manchester. Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. Post superannuable and national terms and conditions of service applicable. Candidates must possess the D.M.R.(T) and have wide experience and training in radiotherapy. A higher qualification in medicine or surgery will be an additional advantage.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 1st February, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time post of DEPUTY DIRECTOR of the Regional Blood Transfusion Service. Salary £1300 (at age 32)–£50–£1750 p.a. Previous experience of blood-transfusion work essential and a higher qualification desirable. National terms and conditions of service applicable and post superannuable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 17th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications from suitably qualified practitioners for the whole-time, non-resident posts of ASSISTANT RADIOLOGIST at the following hospitals :—

(*a*) Lancaster Royal Infirmary, Queen Victoria Hospital, Morecambe, Lancaster Moor and the Royal Albert Hospitals, Lancaster.

(*b*) Stockport and Buxton Hospitals (Stockport Infirmary, Stepping Hill Hospital, Stockport, &c.).

Applicants should possess the D.M.R. (D). and have wide experience in radiology. The successful candidates will work under the general supervision of a consultant and will be required to live within a reasonable distance of the main hospitals. Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. National terms and conditions of service applicable and the posts superannuable. Applicants for more than 1 post should state their preference.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 25th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time, non-resident post of ASSISTANT PATHOLOGIST to the Ashton, Hyde, and Glossop group of hospitals. The person appointed will work under the general supervision of a Consultant. Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. Candidates must have wide experience and training in hospital pathology. The post is superannuable and the National Health Service terms and conditions of service will apply.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 25th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications from suitably qualified practitioners for the following whole-time, non-resident posts of ASSISTANT ANÆSTHETIST working under the direction of Consultants at the following hospital centres :—

(*a*) South Manchester (mainly at Withington Hospital, but with limited sessions at the Duchess of York Hospital).

(*b*) Wigan and Leigh Hospitals and Wrightington Hospital near Wigan.

(*c*) West Manchester Hospitals (Park Hospital, Davyhulme, and other hospitals in the group).

Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. National terms and conditions of service applicable and posts superannuable. Applicants should possess the D.A. Applicants for more than 1 post should state their preference.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 25th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time post of RESIDENT ASSISTANT PHYSICIAN at Baguley Sanatorium, near Manchester. A detached house is available in the grounds of the Hospital, and the person appointed will be required to deputise for the Physician-Superintendent. Applicants must have had wide experience in the diagnosis and treatment of pulmonary tuberculosis and possess a higher medical qualification. Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. National terms and conditions of service applicable and post superannuable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 30th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time or maximum part-time post of CONSULTANT PHYSICIAN, Bolton Hospital Centre. Salary, whole-time £1700–£2750, part-time pro rata ; starting-point according to experience, &c. A higher qualification, sound general experience and training, together with special experience of diseases of the chest, including tuberculosis, essential. Clinics at Bolton Royal Infirmary, Townley's Hospital, Bolton, and the Special Chest Clinic, Bolton, with charge of beds at Townley's Hospital. The person appointed will also act as Consultant Physician to 810 tuberculosis beds in other hospitals in the Group. National terms and conditions of service applicable and post superannuable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 17th January, 1951. Canvassing will disqualify.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE GROUP OF HOSPITALS. ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer status), whole-time or part-time, for a minimum of 9 notional half-days per week. Salary according to terms and conditions of service of hospital medical staff. Appointment subject to National Health Service (Superannuation) Regulations, 1950. A small house to rent in close proximity to the Bishop Auckland General Hospital may be available. Candidates are free to visit the hospitals in the group by arrangement with the Senior Anæsthetist, General Hospital, Bishop Auckland.

Applications, together with names and addresses of 1–3 referees and/or 1–3 testimonials, should be sent to the Senior Administrative Medical Officer, " Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days. Canvassing will disqualify.

OXFORD REGIONAL HOSPITAL BOARD invite applications for the post of ASSISTANT SENIOR MEDICAL OFFICER. The candidate appointed will be required to assist the Senior Administrative Medical Officer in the planning, organisation, and staffing of the hospital and specialist services of the region, and to carry out such administrative and executive duties as may be assigned to him. Salary £1450–£50–£1650 subject to National Health Service (Superannuation) Regulations, 1950. Previous experience in medical administration essential and knowledge of mental health services desirable. Car necessary.

Applications, stating date of birth, full particulars of qualifications, and experience, and the names and addresses of 3 referees, should reach the Secretary, 43, Banbury-road, Oxford, by 29th January, 1951. Further particulars on application.

SAFFRON WALDEN GENERAL HOSPITAL. (50 Beds.) EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT ANÆSTHETIST (for equivalent of 1 notional half-day weekly) at above Hospital. The salary and terms of conditions of service of hospital medical and dental staffs will apply.

Applications (8 copies), stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, should reach the undersigned not later than 22nd January, 1951. Canvassing of Board or Committee members will disqualify. K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners with a higher qualification in Psychiatry for the following posts :—

(*a*) CONSULTANT PSYCHIATRIST (whole-time) who will be attached to the Pastures Hospital, Mickleover, Derbyshire. The appointment includes specialist duties in the hospital and at outpatient clinics at other hospitals. The person appointed may be designated Deputy Medical Superintendent. A house is available on the hospital estate if desired by the successful candidate.

(*b*) CONSULTANT CHILD PSYCHIATRIST. The post will be held on a whole-time or maximum part-time basis. The person appointed will be attached to the Mapperley Hospital, Nottingham, but the majority of his time will be spent at clinics in the Child Guidance Centres of the City and County of Nottingham, in coöperation with those local authorities.

The salary and conditions of service will be in accordance with those agreed between the Ministry of Health and the profession. The posts are subject to the National Health Service (Superannuation) Regulations, 1950.

Application forms and full details may be obtained from the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Completed forms must be received not later than 20th January, 1951. Candidates applying for more than one appointment should indicate their preference. Canvassing will disqualify, but candidates are invited to visit the hospitals and clinics concerned by direct arrangement.

ST. ALBANS CITY HOSPITAL, St. Albans, and FINCHLEY MEMORIAL HOSPITAL, Granville-road, North Finchley, N.12. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the appointment of Part-time ORTHOPÆDIC AND TRAUMATIC SURGEON for 6 half-days per week, to organise and supervise the orthopædic and traumatic work at the above hospitals. The St. Albans City Hospital consists of 3 contiguous hospitals administered as 1, with a total of some 350 Beds. Finchley Memorial Hospital is a general hospital of about 80 Beds. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with the names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 27th January, 1951, Canvassing will disqualify, but candidates are invited to visit the hospitals by direct appointment with the Secretaries of the hospitals.

SCOTLAND. RED CROSS SANATORIA OF SCOTLAND. (156 Beds.) Applications invited for post of SENIOR ASSISTANT MEDICAL OFFICER at the above Sanatoria. Candidates should be Members of a Royal College of Physicians and must have had experience in the treatment of pulmonary tuberculosis and in the aftercare of major chest surgical cases. Commencing salary £1300 p.a., rising by £50 annually to a maximum of £1750, less a deduction for any emoluments provided.

Applications, accompanied by the names of 2 referees, to be sent to the Medical Director, Tor-na-Dee, Millitimber, Aberdeenshire, before 31st January.

WELSH REGIONAL HOSPITAL BOARD invite applications for the appointment of Whole-time RADIOLOGIST (Senior Hospital Medical Officer grade) to serve the hospitals in the Merthyr and Aberdare Hospital Management Committee and neighbouring groups. He would be based on the Merthyr General Hospital and would work under the direction of a Consultant. Candidates must be in possession of the Diploma of Medical Radiology (diagnostic).

Applications, stating date of birth, giving a summary of qualifications, experience, and publications, with names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement. Canvassing will disqualify, but this does not prevent candidates from visiting hospitals in the group.

WELSH REGIONAL HOSPITAL BOARD invite applications for the appointment of a Whole-time CONSULTANT ORTHOPÆDIC AND TRAUMATIC SURGEON to serve the Clwyd and Deeside Hospital Management Committee Area. He will be based at Rhyl. Candidates should be Fellows of a Royal College of Surgeons and should have had special experience in the specialty. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs and will be subject to the National Health Service (Superannuation) Regulations, 1950.

Applications, stating date of birth, giving a summary of qualifications, experience, and publications, with names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement. Canvassing will disqualify, but this does not preclude candidates from visiting hospitals in the area.

Hospital Services : Junior Appointments

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. BATTERSEA AND PUTNEY GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SURGICAL OFFICER required. Post graded Junior Hospital Medical Officer. Salary within scale £700–£50–£1000 p.a.

Applications, with copies of 2 recent testimonials, to Administrative Officer.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. BATTERSEA AND PUTNEY GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (second or third post) required for 6 months from 1st February, 1951, to include 2 months' casualty duties. Salary £400–£450 p.a., according to experience, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, stating age, nationality, experience, and qualifications with dates, accompanied by copies of 3 recent testimonials, should be sent before 15th January, 1951, to the Administrative Officer.

CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE.

Dulwich Hospital, East Dulwich-grove, S.E.22

St. Giles' Hospital, St. Giles'-road, Camberwell, S.E.5

Required, HOUSE OFFICERS (medical duties). Salary £350, £400, or £450 a year, according to experience. Resident posts with deduction at rate of £100 a year for residential services provided. Appointments tenable for 6 months in first instance.

Applications, stating age, details of qualifications, and experience, enclosing copy testimonials, to the Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22.

CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE.

Dulwich Hospital, East Dulwich-grove, S.E.22

St. Giles' Hospital, St. Giles'-road, Camberwell, S.E.5

Required, HOUSE OFFICERS (surgical duties). Salary £350–£450 a year, according to experience, with deduction at rate of £100 a year in respect of residence. Appointments tenable for 6 months in first instance.

Applications, stating age, qualifications, and experience, enclosing copy testimonials to the Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, S.E.22.

CHARING CROSS GROUP OF HOSPITALS. Applications invited for post of HOUSE SURGEON, tenable at Wembley Hospital for 6 months from 1st March, 1951.

Applications, stating age, qualifications, and experience, should be sent, with copies of testimonials, to reach the undersigned by 3rd February, 1951.

GEORGE J. JONES, Secretary to the Board of Governors.
Wembley Hospital, Wembley, Middlesex.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.1. (An Associate Hospital of Guy's Hospital.) There is a vacancy for a Part-time NON-RESIDENT CASUALTY OFFICER for 5 morning sessions weekly. The appointment is for 6 months from 1st February, 1951, and for the purpose of salary is graded as Junior Registrar.

Applications, accompanied by copies of recent testimonials, should reach the undersigned not later than first post, 18th January, 1951. W. H. SIDNELL, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER in the General Surgical and Urological Department. Appointment for 6 months from 1st March, 1951. Salary, terms, and conditions of service as issued by Ministry of Health.

Applications to Medical Director by 20th January, 1951.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER in the Surgical Department. Appointment for 6 months from 19th February, 1951. Salary, terms and conditions of service as issued by Ministry of Health.

Applications to Medical Director by 20th January, 1951.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. ROYAL FREE GROUP. Required, CASUALTY OFFICER (resident), Male or Female. Salary £400 or £450 p.a., according to experience, plus £50 p.a. as a supplemental payment, post vacant 1st April, tenable for 6 months at the Main Outpatient Department, Camden Town, N.W.1.

Applications must be made on the prescribed form, with copies of 3 recent testimonials, to be returned by 2nd February.

K. A. F. MILES, House Governor.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. ROYAL FREE GROUP. Required, RESIDENT HOUSE SURGEON (Male or Female), for a period of 6 months. The successful candidate will be required to take up his duties on 18th March. Salary in accordance with the new national scale.

Applications on the prescribed form, with copies of 3 recent testimonials, to be returned by 2nd February.

K. A. F. MILES, House Governor.

AMENDED ADVERTISEMENTS

HIGHLANDS HOSPITAL, Winchmore-hill, London, N.21. Required, HOUSE SURGEON (first post), vacant 6th March, 1951. 6 months' appointment. Salary £350 p.a., less £100 p.a. for residential emoluments.

Applications, with copies of 3 testimonials, to be sent to the Secretary, Northern Group Hospital Management Committee, Royal Northern Hospital, Holloway, London, N.7, from whom forms of application may be obtained.

HIGHLANDS HOSPITAL, Winchmore-hill, London, N.21. Required, HOUSE PHYSICIAN (first post), vacant 15th February, 1951. 6 months' appointment. Salary £350 p.a., less £100 p.a. for residential emoluments.

Applications, with copies of 3 testimonials, to be sent to the Secretary, Northern Group Hospital Management Committee, Royal Northern Hospital, Holloway, London, N.7, from whom forms of application may be obtained.

Kindly note that the vacant dates for the 2 above advertisements appeared incorrectly in 6th January, 1951, issue.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies on 15th March, 1951, for 2 SURGICAL REGISTRARS (part-time) to attend in the Outpatient and Casualty Departments as follows :—

Monday morning (Outpatient Department, 1 session).
Tuesday morning (Outpatient Department, 1 session).
Tuesday afternoon (Casualty Department, 1 session).
Wednesday morning (Casualty Department, 1 session).
Thursday morning (Outpatient Department, 1 session).
Thursday morning (Casualty Department, 1 session).
Thursday afternoon (Casualty Department, 1 session).
Friday morning (Casualty Department, 1 session).
Saturday morning (Outpatient Department, 1 session).

The appointments are graded as Senior Registrarships within the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Further particulars and form of application, which must be returned not later than 12th February, 1951, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for 3 Whole-time ASSISTANT MEDICAL REGISTRARS on 1st April, 1951. The appointments are graded as Registrarships within the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Further particulars and form of application, which must be returned not later than 5th February, 1951, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

HOSPITALS FOR DISEASES OF THE CHEST. Applications are invited from suitably qualified medical practitioners for the post of RESIDENT SURGICAL FIRST ASSISTANT AND REGISTRAR at the Hospital's Country Branch, Arlesey, Beds (near Letchworth). The post is graded Senior Registrar and the appointment is for 1 year and renewable. Higher surgical qualifications and experience in thoracic surgery essential.

Applications (6 copies), with copies of 3 testimonials, should be sent to the Secretary, London Chest Hospital, E.2 (from whom further particulars may be obtained), to arrive by 20th January, 1951.

ROYAL EYE HOSPITAL. King's College Hospital Group. Applications invited for post of JUNIOR HOUSE SURGEON (second or third post) from 1st March, 1951. Salary in accordance with terms and conditions of service for medical staff. Applicants should have completed service with H.M. Forces.

Applications should be made to the Secretary, The Royal Eye Hospital, St. George's-circus, S.E.1, by 22nd January, 1951.

ROYAL NORTHERN HOSPITAL, Holloway, London, N.7. NORTHERN GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON AND CASUALTY OFFICER, post vacant 15th February, 1951, for a period of 6 months. Salary at rate of £400–£450 p.a., according to experience, with a deduction of £100 p.a. in respect of residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent not later than 20th January, 1951, to—

GILBERT G. PANTER, Secretary.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.13. HOUSE OFFICER (first, second, or third post) to a General Surgeon with some duties in the E.N.T. Department, vacant 21st February, 1951. Salary, terms, and conditions of service as approved for hospital medical staff.

Applications, stating age, nationality, qualifications, with dates and details of experience, together with copies of 2 recent testimonials, to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13. Closing date 31st January, 1951.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.13. Locum Tenens RESIDENT SURGICAL OFFICER (grade Senior Registrar), vacant 1st February, 1951, for 3 months. Salary, terms, and conditions of service as approved for hospital medical staff. Applicants should have held house appointments and have had surgical experience, preference to those holding Diploma F.R.C.S.

Applications, stating age, nationality, qualifications, details of experience, with copies of 2 recent testimonials, to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13, as soon as possible.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. Applications invited from suitably qualified medical practitioners for the post of ANÆSTHETIC REGISTRAR (part-time). The grading will be that of Registrar or Senior Registrar, according to qualifications and experience. The appointment is for 1 year and renewable, and attendance is required on 7 notional half-days a week, including 3 at the Country Branch.

Applications, stating age, qualifications with dates, and previous appointments held, and accompanied by copies of 3 testimonials, should reach the undersigned not later than 20th January, 1951.

London Chest Hospital, E.2. THOMAS BROWN, Secretary.

LONDON HOSPITAL, Whitechapel, E.1. Required, REGISTRAR (resident) to the Gynæcological and Obstetric Department. Previous experience in gynæcology and obstetrics essential. The appointment will be for 1 year, renewable for a further year at a salary in accordance with the terms and conditions of service for hospital medical and dental staffs.

Applications (12 copies), giving the names and addresses of 3 referees, should be addressed to the House Governor (from whom further particulars may be obtained) by 5th February, 1951. H. BRIERLEY, House Governor.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and Banstead Wood, Surrey. Required, RESIDENT MEDICAL OFFICER (graded Senior House Officer), Male or Female, at Hackney-road, E.2, post vacant 1st March, 1951. Candidates must have had experience in the treatment of sick children. The appointment will be for 1 year. Salary £670 p.a., subject to a charge of £100 p.a. for residential emoluments.

Application forms may be obtained from the undersigned and should be returned with not more than 3 testimonials not later than 29th January, 1951. CHARLES H. BESSELL, Secretary.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications invited from registered Male practitioners for post of RESIDENT CASUALTY OFFICER. Applicants must not be more than 10 years qualified. The appointment is for 6 months, duties to commence 1st April, 1951. Salary and conditions of service in accordance with those laid down by the Ministry of Health for House Officers (second or subsequent post).

Application forms may be obtained from the House Governor, The Royal Free Hospital, Gray's Inn-road, to whom they should be returned not later than 29th January, 1951.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications invited from registered medical practitioners (Men or Women) for appointment of RESIDENT MEDICAL OFFICER, vacant 1st March, 1951. Salary scale and conditions of service will be in accordance with those laid down by the Ministry of Health for Junior Hospital Medical Officers.

Application forms may be obtained from the House Governor and should be duly filled in and returned on or before 29th January, 1951.

ROYAL FREE HOSPITAL, N.W. Branch. Applications invited immediately from medical practitioners of not more than 10 years' qualification, for post of Locum RESIDENT MEDICAL OFFICER at the above Hospital. Duties to commence on 1st February, 1951, or as soon as possible after that date, for a period of 6 months. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Junior Hospital Medical Officers.

Application forms may be obtained from the House Governor, The Royal Free Hospital, Grays Inn-road, W.C.1.

ROYAL FREE HOSPITAL, Liverpool-road, N.1. Applications invited from registered medical practitioners (Men or Women) for appointment of RESIDENT MEDICAL OFFICER, post vacant 1st March, 1951. Salary scale and conditions of service will be in accordance with those laid down by the Ministry of Health for Junior Hospital Medical Officers.

Application forms may be obtained from the House Governor, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned on or before 29th January, 1951.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Applications are invited from duly registered medical men for post of Part-time SENIOR REGISTRAR to the Department of Physical Medicine. Candidates must have had previous experience in this specialty and must hold D.Phys.Med. Duties will include attendance once a week for 1 session. Present holder of post is a candidate. Terms and conditions of service of hospital medical and dental staffs (Senior Registrar) will apply.

Applications, on a form obtainable from the House Governor, with copies of 3 recent testimonials, should be sent to the House Governor by 29th January, 1951.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Applications are invited for the post of RESIDENT SENIOR REGISTRAR PATHOLOGIST. Present holder of post is a candidate. Terms and conditions of service of hospital medical and dental staffs (Senior Registrar) will apply.

Applications, on a form obtainable from the House Governor, with copies of 3 recent testimonials, should be sent to the House Governor by 29th January, 1951.

ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street and Queen-square, W.C.1. Required, HOUSE SURGEON with care of gynæcological and surgical beds, post vacant 1st February, 1951. Appointment for 6 months. Salary on National Health Service scale £350 p.a., less emoluments £100. Candidates will be required to attend a meeting of the Medical Committee for interview.

Applications, stating age, qualifications, and experience, to be addressed to the Secretary.

SOCIAL PSYCHOTHERAPY CENTRE, 7, Fellows-road, Hampstead, N.W.3. JUNIOR REGISTRAR in Child Guidance Department for 2 notional half-days per week to commence on 26th February, 1951. Successful applicant required to undergo a personal analysis. Salary, terms, and conditions of service as issued by Ministry of Health.

Application forms obtainable from, and returnable by 27th January, 1951, to. Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10.

SOUTH WEST METROPOLITAN REGIONAL HOS-PITAL BOARD. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the appointment of SENIOR REGISTRAR in Pathology at Group Pathological Laboratory, St. Mary Abbots Hospital, Marloes-road, Kensington, W.8. The appointment will be subject to the provisions of the National Health Service superannuation regulations, and will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs for the time being in operation.

Applications for forms of application (5 copies required to be completed) must be accompanied by a stamped addressed foolscap envelope, and made to the Secretary (L.130), Fulham and Kensington Hospital Management Committee, St. Mary Abbots Hospital, Marloes-road, Kensington, W.8, and returned to him not later than 27th January, 1951. Candidates may visit the Laboratory (by arrangement with the Pathologist), but canvassing in any way will disqualify.

ST. GEORGE'S HOSPITAL, S.W.1. Required, House SURGEON to the Neurosurgical Department of St. George's Hospital, at the Atkinson Morley Hospital, Wimbledon, post vacant 1st March, 1951. Preference will be given to applicants who have already held a House Officer post, and the terms and conditions of the appointment will be in accordance with the National Health Service Acts.

Applications, together with the names of 2 referees, must be received by the undersigned not later than 20th January, 1951.

P. H. CONSTABLE, House Governor.

ST. GEORGE'S HOSPITAL, S.W.1. Applications invited for post of REGISTRAR to the Neurosurgical Department of St. George's Hospital, at the Atkinson Morley Hospital, Wimbledon. The appointment will be made as soon as possible, and will be for 1 year in the first instance.

Applications, together with the names of 2 referees, must be received by the undersigned not later than 22nd January, 1951.

P. H. CONSTABLE, House Governor.

ST. THOMAS'S HOSPITAL, London, S.E.1. Applications invited for post of SENIOR MEDICAL REGISTRAR for a period of 1 year in the first instance. Terms and conditions of service of hospital medical and dental staffs will apply.

Applications (12 copies), stating age, qualifications with dates, details of experience, and the names and addresses of 3 referees to whom the Hospital may write, should be received by the Clerk of the Governors not later than 10th February, 1951.

ST. MARY'S HOSPITAL. Children's Department. PRINCESS LOUISE KENSINGTON HOSPITAL FOR CHILDREN, St. Quintin-avenue, W.10. Required, HOUSE PHYSICIAN (second or third post), post vacant on 1st March, 1951, for 6 months. Salary and conditions of service in accordance with National Health Service scale. Recognised for the D.C.H.

Applications, stating age, nationality, qualifications, together with 3 recent testimonials, should reach the undersigned not later than 3rd February, 1951. A. C. YOUNG, Secretary.

ST. MARY'S HOSPITAL. Children's Department. PRINCESS LOUISE KENSINGTON HOSPITAL FOR CHILDREN, St. Quintin-avenue, W.10. Required, NON-RESIDENT CASUALTY OFFICER (second or third post), post vacant on 1st March. 1951, for 6 months. Salary and conditions of service in accordance with National Health Service scale. Recognised for the D.C.H.

Applications, stating age, nationality, qualifications, together with 3 recent testimonials, should reach the undersigned not later than 3rd February, 1951. A. C. YOUNG, Secretary.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of RADIOLOGICAL REGISTRAR at St. Mary's Hospital. Candidates must be registered medical practitioners and possess a recognised Diploma in Radiology. The appointment will be for a first period of 12 months, and the successful candidate will be eligible for re-election. The grading of this post allows for the appointment of a Senior Registrar or Registrar and in the event of no application being received from a suitably qualified Senior Registrar, the appointment may be made in the Registrar grade.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, with grading, together with the names and addresses of 3 referees, should reach the undersigned by 20th January, 1951.

21st December, 1950. ALAN POWDITCH, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of REGISTRAR to the Pædiatric Department of St. Mary's Hospital. The duties of this post include work at the constituent Children's Hospitals within the St. Mary's group and in the Neonatal Department. Previous experience in pædiatrics is necessary. Preference will be given to candidates holding the M.R.C.P. The appointment will be for a first period of 12 months and the successful candidate will be eligible for re-election for a second year but not ordinarily for a longer period. The grading of this post is either Registrar or Senior Registrar according to the candidate's experience.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, with grading, together with the names and addresses of 3 referees, should reach the undersigned by 20th January, 1951.

20th December, 1950. ALAN POWDITCH, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of REGISTRAR to the E.N.T. Department of St. Mary's Hospital. Candidates must be Fellows of the Royal College of Surgeons of England or graduates in surgery of a British university. The appointment will be for a first period of 12 months, and the successful candidate will be eligible for re-election for a second year but not ordinarily for a longer period. The grading of this post is either Registrar or Senior Registrar according to the candidates experience.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, with grading, together with the names and addresses of 3 referees, should reach the undersigned by 20th January, 1951.

20th December, 1950. ALAN POWDITCH, House Governor.

ST. STEPHEN'S HOSPITAL, Fulham-road, S.W.10. OBSTETRICAL AND GYNÆCOLOGICAL HOUSE OFFICERS (resident). Recognised for D.Obst. R.C.O.G. but not for M.R.C.O.G. Salary £450 p.a.

Applications, giving names of 2 personal referees, to the Medical Superintendent as soon as possible.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.3 (Branch of St. George's Hospital, S.W.1). Applications invited for post of Part-time CASUALTY OFFICER (non-resident) for 6 months from 1st March, 1951. Hours of duty 9.30 A.M. to 12.30 P.M. Mondays to Saturdays inclusive. Salary in accordance with national scale.

Applications, stating age, qualifications with dates, previous appointments held, with copies of 2 recent testimonials, should reach the Assistant Secretary, Victoria Hospital for Children, by 27th January, 1951.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. Applications invited for resident post of HOUSE SURGEON. Salary £350–£450 p.a., less £100 p.a. for residence. Appointment for 6 months from 1st February, 1951, plus 14 days locum duty from 17th January, 1951.

Applications, stating full particulars, with copies of 2 testimonials, to Assistant Secretary by 15th January, 1951.

For Registrar posts North Middlesex Hospital, N.18, and St. Mary's Hospital, E.13, see North East Metropolitan Regional Hospital Board advertisment in Provincial section.

Provincial

ALTRINCHAM GENERAL HOSPITAL, near Manchester. (130 Beds.) JUNIOR HOUSE OFFICER required to commence duties on or about 15th February, 1951. 6 months' appointment. Appropriate Ministry of Health salary scale according to experience, less £100 p.a. for emoluments. R practitioners within 3 months of qualification, or holding first posts, may apply.

Applications, stating age, qualifications, &c., should be addressed to Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

ALTRINCHAM GENERAL HOSPITAL, near Manchester. (130 Beds.) SENIOR HOUSE OFFICER (resident) required to commence duties on or about 1st March, 1951. 12 months' appointment. Salary £670 p.a., less a deduction of £155 for residential emoluments. Post recognised for the F.R.C.S. qualification. This resident surgical appointment in a busy general hospital, staffed by Manchester Consultant Surgeons, offers excellent opportunities of practical surgical experience to suitably qualified candidates.

Applications, stating qualifications, previous hospital experience, age, nationality, names and addresses of 3 referees, should be forwarded to the Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

AYLESBURY. TINDAL GENERAL HOSPITAL. (297 Beds.) HOUSE SURGEON (first or second post), vacant 13th February, 1951. This post offers good surgical experience and is recognised for the F.R.C.S.

Please apply, with 2 testimonials or names for reference, to the Administrative Officer.

BARNET, HERTS. CLARE HALL HOSPITAL. Junior REGISTRAR (surgical) required for the Thoracic Unit. The Hospital has 536 Beds, including 50 for surgery which includes tuberculous and non-tuberculous thoracic conditions. Duties include those of a Resident Surgical Officer. Appointment subject to Ministry of Health terms and conditions of service.

Applications, stating age, qualifications, and experience, should be forwarded immediately to the Medical Director, Clare Hall Hospital, South Mimms, Barnet, Herts.

BRIGHTON. ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road. BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON. Salary at the rate of £350, £400, or £450 p.a., according to experience, less £100 for residential emoluments. Duties to commence from 9th February, for a period of 6 months.

Applications, giving age, nationality, qualifications, and experience, together with copies of recent testimonials, to be sent to the Administrative Officer immediately.

ASHTON, HYDE, AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the following appointments:—

Lake Hospital, Ashton-under-Lyne (600 Beds)

HOUSE SURGEON, resident at the above Hospital, but also for duty at Ashton Infirmary under same Consultant. The appointment will be limited to 6 months. Salary £350–£450 p.a., according to experience, less £100 p.a. for board and lodging, &c. R practitioners within 3 months of qualification also those holding first posts may apply.

District Infirmary, Ashton-under-Lyne (200 Beds)

RESIDENT CASUALTY OFFICER for duty at the above Hospital, where a large amount of traumatic, orthopædic, and general surgery is done. Busy Outpatients' Department. Salary in accordance with Senior House Officer grade £670 p.a., less £155 p.a. for board and lodging, &c. Suitably qualified R practitioners may apply.

Applications, stating age, nationality and qualifications, accompanied by copies of 3 recent testimonials, should be forwarded to R. W. MCVITY, Secretary.

Astley-road, Stalybridge, Cheshire.

BARNSTAPLE. NORTH DEVON INFIRMARY. (110 Beds.) Locum CASUALTY OFFICER required immediately for about 6 weeks.

Applications to be sent to the Secretary and Finance Officer, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BIRMINGHAM. MARSTON GREEN MATERNITY HOSPITAL, Berwicks-lane, MARSTON GREEN. THE BIRMINGHAM (DUDLEY ROAD) GROUP OF HOSPITALS. Required, OBSTETRICS HOUSE OFFICER at the above Hospital, to take up duty on 1st February, 1951. The Hospital is recognised for purposes of D.Obst. R.C.O.G. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, particulars of qualifications, and experience, should be forwarded to the undersigned, together with the names of 2 referees.

J. PRESTON, Secretary,
Hospital Management Committee.

Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 16. THE CHILDREN'S HOSPITAL, THE UNITED BIRMINGHAM HOSPITALS. Required, SURGICAL REGISTRAR (non-resident) in the grade of Junior Registrar or Registrar, post vacant 1st February, 1951. Applicants should have had general surgical experience, and preference will be given to Fellows of the Royal College of Surgeons (England). Residence in the Hospital will be required when the Resident Surgical Officer is absent. The appointment will be subject to the terms and conditions of service of hospital medical and dental staffs.

Forms of application may be obtained from the undersigned and should be returned immediately.

N. R. WINWOOD, House Governor.

Ladywood-road, Birmingham, 16.

BIRMINGHAM. THE SKIN HOSPITAL. (61 Beds.) THE BIRMINGHAM (DUDLEY ROAD) GROUP OF HOSPITALS. Required, HOUSE OFFICER. The Inpatient Department is modern and well equipped and provides facilities for the study of skin diseases. The successful applicant will be required to assist Consultants at Outpatient Clinics.

Applications should be forwarded to the undersigned immediately. J. PRESTON, Secretary,
Birmingham (Dudley Road) Group of Hospitals.

Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN. HOUSE SURGEON required. Salary £400 or £450 p.a., according to experience. The appointment is for a period of 6 months. Duties commence 1st April, 1951.

Application forms can be obtained from the undersigned, and should be returned not later than 3rd February, 1951.

BERNARD SYLVESTER, House Governor.

The United Birmingham Hospitals, Birmingham and
Midland Hospital for Women, Showell Green-lane,
Sparkhill, Birmingham, 11.

BATH. ROYAL UNITED HOSPITAL. Required, House PHYSICIAN. Commencing date 5th February, 1951. Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be received by undersigned as soon as possible. J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.

Manor Hospital, Bath.

BATH. ST. MARTIN'S HOSPITAL. Required, House SURGEON. Salary and terms and conditions of service in accordance with those laid down by the Ministry of Health, plus an additional £50 p.a.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be received by the undersigned as soon as possible. J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.

Manor Hospital, Bath.

BISHOP AUCKLAND. GENERAL HOSPITAL AND MATERNITY HOME. SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON in Department of Obstetrics and Gynæcology. Salary £350 or £400 p.a., according to first or second post. Board-residence provided at Base Hospital (General) for which £100 p.a. deducted. The departmental beddage is 60, including 20 abnormal midwifery and 24 gynæcological. The present departmental staffing includes a second house officer.

Applications, stating age, nationality, qualifications, and any experience, together with 3 recent testimonials, should be sent to the Secretary, The General Hospital, Bishop Auckland, co. Durham, as soon as possible.

BOLTON. THE ROYAL INFIRMARY. (235 Beds—Junior Medical Establishment of 10.) Required, RESIDENT HOUSE SURGEONS (2) for general surgical duties, one post vacant immediately and the other on 12th February. Appointments will be for 6 months with salary £350, £400, or £450 p.a., according to experience. Other conditions of service in accordance with the terms issued by the Ministry of Health. A charge of £100 p.a. will be made for residence.

Applications, stating age, nationality, qualifications, and experience, together with the names of 2 persons to whom reference may be made, to be sent to the undersigned at the Royal Infirmary, Bolton, as soon as possible.

H. P. TRAVIS, Secretary, Bolton and
District Hospital Management Committee.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON, post vacant 10th January, 1951. Salary in accordance with National Health Service scale—£350–£450 p.a., with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, with copies of 3 testimonials, to the Assistant Secretary of the above Hospital.

BOURNEMOUTH. CHRISTCHURCH HOSPITAL, HANTS. (305 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN, post now vacant. Suitable for candidates wishing to study for the M.R.C.P. The Consultant Physicians are the same as at the Royal Victoria Hospital. Salary according to National Health Service scale £350–£450 p.a., with a deduction of £100 for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, with copies of 3 testimonials, to the Assistant Secretary of Christchurch Hospital.

BRADFORD ROYAL INFIRMARY. Senior House SURGEON for general and urological surgery. Salary £400–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, to Secretary.

BRADFORD ROYAL INFIRMARY. House Surgeon required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. Orthopædic and ACCIDENT HOUSE SURGEON required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, along with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. House Surgeon (Thoracic Unit) required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL. House PHYSICIAN required. Salary £350–£450 p.a., according to experience, less £100 p.a. in respect of emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Royal Infirmary, Bradford.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. Applications invited for appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in Venereology (non-resident). The successful candidate will be attached to Frenchay Hospital and in addition will be required to undertake duties in the various Bristol area clinics. Previous experience in venereology an advantage. The appointment will be subject to the National Health Service superannuation regulations and terms and conditions for hospital medical staff. Salary scale £700–£50–£1000.

Applications, with full particulars of age, qualifications, and experience, and the names and addresses of 3 referees, should reach the Secretary, Frenchay Hospital, Bristol, not later than 31st January, 1951.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. COSSHAM MEMORIAL HOSPITAL. (101 Beds—General and Casualty.)

HOUSE PHYSICIAN (first post) required 1st March, 1951.

HOUSE SURGEON AND CASUALTY OFFICER (first post) required 1st March, 1951.

National salary scale and conditions.

Applications, with full particulars, should be sent to the Group Secretary, Frenchay Hospital, Bristol.

BRISTOL. HAM GREEN HOSPITAL AND SANATORIUM. Required, JUNIOR HOUSE OFFICER. Salary £350–£450 p.a., less £100 for residential emoluments. This 600-Bed Hospital contains 200 Beds devoted to the treatment of pulmonary tuberculosis. Chest surgery is in use and the rest of the Hospital admits all types of infectious diseases from a wide area and research study is encouraged. Appointment tenable for 6 months but is renewable at the discretion of the Hospital Management Committee.

Applications to the Resident Physician, Ham Green Hospital, Pill, near Bristol.

BROMSGROVE. HILL TOP HOSPITAL. (76 Beds.) Required, HOUSE SURGEON (resident) at the above Hospital shortly to be used as a Regional Thoracic Centre, post vacant now. Salary, terms, and conditions of service in accordance with those laid down by the Ministry of Health for hospital medical staff.

Applications, stating age, qualifications, and experience, and giving the names of 3 referees, should be sent to—

C. M. SMITH, Secretary,
Mid Worcestershire Hospital Management Committee.
Birmingham-road, Bromsgrove.

BURTON-ON-TRENT. GENERAL INFIRMARY. (Acute General Hospital—235 Beds.) Required, HOUSE PHYSICIAN (resident). Salary range £350–£450 in accordance with Ministry of Health terms.

Applications, with all details and copies of testimonials, to be forwarded immediately to—

J. E. SMITH, Secretary,
Burton-on-Trent Hospital Management Committee.

BURY GENERAL HOSPITAL. (164 Beds.) **Required,** HOUSE SURGEON. Post recognised for the F.R.C.S. Hospital is mainly surgical and experience can be gained in orthopædic and E.N.T. work. Salary and conditions of service in accordance with national scale.

Applications, giving full details of qualifications and experience, should be made immediately to—

H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.
Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE.

Florence Nightingale Hospital, Bury (120 Beds for Infectious Diseases)

Aitken Sanatorium, Holcombe, near Bury (70 Beds for Tubercle)

A vacancy exists for a HOUSE PHYSICIAN to work between these Hospitals. Applicants should have held previous House Officer posts. Salary and conditions of service will be in accordance with those laid down for hospital medical and dental staffs.

Applications should be made immediately to—

H. WILKINSON, Secretary to the Committee.
Bury General Hospital, Walmersley-road, Bury, Lancs.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON to the General Surgical and Urological Departments, post now vacant. Appointment limited to 6 months. Post is recognised for the F.R.C.S. Diploma, and the salary will be £400 or £450 p.a., according to the number of posts held, with a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications with dates, and details of previous experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, ORTHOPÆDIC HOUSE SURGEON. Appointment vacant early in January, 1951, and limited to 6 months. Previous experience in orthopædic surgery an advantage. Post is recognised for the F.R.C.S. Diploma. Salary £400 or £450 p.a., according to number of posts held, with a deduction of £100 p.a. for residential emoluments.

Applications, giving age, full particulars of qualifications with dates, and experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, SENIOR HOUSE SURGEON (Male), post vacant early in January, 1951. Appointment for 6 months. Appointment is recognised for the F.R.C.S. Diploma, and salary will be £400 or £450 p.a., according to the number of posts held, with a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications with dates, and details of previous experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (134 Beds.) Required, HOUSE PHYSICIAN (first post). 6 months' appointment. Salary in accordance with national scale. Full residential emoluments. R practitioners within 3 months of qualification may apply.

Applications are to be sent to—

A. W. YOUNGS, Secretary,
West Wales Hospital Management Committee.
Glangwili, Carmarthen.

CHESTERFIELD HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER required in the specialty of Geriatrics for duty in 182 Bedded unit at Scarsdale and Penmore Hospitals, Chesterfield. Ministry of Health salary—£700–£50–£1000 p.a., less appropriate deduction where resident—and conditions of service.

Applications, stating age, qualifications, experience, &c., with the names of 3 referees, to—

M. H. BOONE, Secretary,
Chesterfield Hospital Management Committee.
Royal Hospital, Chesterfield.

CHESTERFIELD ROYAL HOSPITAL. (327 Beds.) Required, SENIOR HOUSE SURGEON for the Accident and Orthopædic Departments. Salary, less appropriate deduction for resident post, and conditions of service, as determined by Ministry of Health.

Further particulars obtainable from the undersigned, to whom applications should be submitted forthwith.

M. H. BOONE, Secretary,
Chesterfield Hospital Management Committee.
Royal Hospital, Chesterfield.

CHESTERFIELD ROYAL HOSPITAL. (327 Beds.) Required, HOUSE OFFICER for the Casualty Department. Salary and conditions of service as laid down by Ministry of Health. This post carries special additional allowance of £50 p.a.

Apply to undersigned, from whom further particulars are obtainable. M. H. BOONE, Secretary,
Chesterfield Hospital Management Committee.
Royal Hospital, Chesterfield.

CHELMSFORD AND ESSEX HOSPITAL. 2 House SURGEONS required, 1 to commence beginning of January and 1 beginning of February. Salary according to National Health Service scale.

Apply, Secretary, Hospital Management Committee, Chelmsford Group, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL, London-road, CHELMSFORD. JUNIOR REGISTRAR (Casualty Officer) required at above Hospital. To commence immediately. Salary according to National Health Service scale.

Apply to Secretary, Hospital Management Committee—Chelmsford Group, London-road, Chelmsford.

CHELMSFORD AND ESSEX AND ST. JOHN'S HOSPITALS. HOUSE SURGEON required to work at above Hospitals. Salary according to National Health Service scale.

Apply to Secretary, Hospital Management Committee—Chelmsford Group, London-road, Chelmsford.

COLCHESTER. ESSEX COUNTY HOSPITAL. Applications invited for appointment of Locum Tenens RESIDENT SURGICAL OFFICER (Registrar). Applicants must be Fellows of a Royal College of Surgeons. National terms and conditions. Appointment terminable by 1 month's notice.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester, not later than 22nd January, 1951.

COVENTRY GROUP NO. 20 HOSPITAL MANAGEMENT COMMITTEE. Applications invited for under-mentioned posts. National scale of salaries :—

Coventry and Warwickshire Hospital (346 Beds)
HOUSE SURGEON, General Surgical duties, post now vacant.

George Eliot Hospital, Nuneaton (289 Beds)
HOUSE SURGEON for general surgical duties, post vacant 31st January.
HOUSE PHYSICIAN for general medical duties including a developing Pædiatric Unit, now vacant.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials, to the Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

DARLINGTON MEMORIAL HOSPITAL. Required, RESIDENT ANÆSTHETIST (Male or Female). National Health Service superannuation regulations in force. Previous experience in anæsthesia an advantage, but not essential (trainee post).

Apply, with references and full details, forthwith to—
G. W. BECKWITH, Secretary,
Darlington District Hospital Management Committee.

DARLINGTON MEMORIAL HOSPITAL. Applications invited from Male or Female practitioners with experience, for post of CASUALTY OFFICER (Junior Hospital Medical Officer), resident. Salary £700–£50–£1000 p.a. The post is tenable for 12 months and is renewable annually.

Apply, with references, stating age and experience, to—
G. W. BECKWITH, Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Derby AREA NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (general surgery), post vacant 19th February, 1951. 6 months' appointment. Recognised for F.R.C.S. National terms and conditions for House Officers apply.

Applications, with copies of 2 testimonials, should be sent as early as possible to the Secretary, Derbyshire Royal Infirmary, Derby.

DONCASTER HOSPITAL MANAGEMENT COMMITTEE. WESTERN HOSPITAL. Required, HOUSE SURGEON (Male or Female) in the grade of Senior House Officer, post will become vacant on 4th March, 1951. Salary at the rate of £670 p.a., from which a deduction at the rate of £130 p.a. will be made for board, residence, &c.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be forwarded by 16th February, 1951, to—
ARTHUR JONES, Secretary to the Committee.
c/o Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (Recognised under the Regulations for the examinations of the R.C.S.) Required, ORTHOPÆDIC HOUSE SURGEON in the grade of Senior House Officer. Salary at rate of £670 p.a., from which a deduction at rate of £130 p.a. will be made for board, residence, &c.

Applications, stating age, education, qualifications, and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to reach the undersigned immediately.

ARTHUR JONES, Secretary
Doncaster Hospital Management Committee.

DONCASTER ROYAL INFIRMARY. (330 Beds—recognised under the Regulations for the Examinations of the R.C.S.) Required, HOUSE SURGEON (Male or Female). Salary £350, £400, or £450 p.a., according to experience. A deduction at rate of £100 p.a. made for board, residence, &c.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, should be forwarded immediately to—
ARTHUR JONES, Secretary,
Doncaster Hospital Management Committee.
c/o Doncaster Royal Infirmary.

DORCHESTER. DORSET COUNTY HOSPITAL. (125 Beds.) HOUSE SURGEON (Male or Female) required, post now vacant. Appropriate Ministry of Health salary according to experience, with a deduction of £100 p.a. for residence. Post tenable for 6 months.

Applications, stating age, experience, qualifications, and nationality, together with copies of testimonials, to be sent to the Secretary, West Dorset Group Hospital Management Committee, Damers-road Dorchester, immediately.

DORCHESTER. DORSET COUNTY HOSPITAL. (144 Beds.) HOUSE PHYSICIAN (Male or Female) required, post vacant mid-February, 1951. Post tenable for 6 months. Appropriate Ministry of Health salary according to experience, less £100 p.a. for residence.

Applications, giving details of age, experience (if any), qualifications, and nationality, together with copies of testimonials, to be sent to the Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

DODDINGTON, CAMBS. COUNTY HOSPITAL. (120 Beds.) EAST ANGLIAN REGIONAL HOSPITAL BOARD. Required, RESIDENT MEDICAL OFFICER at above Hospital. Commencing salary £775 p.a., rising to £890 p.a. in second year of tenure. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications (7 copies), stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, should be sent to the undersigned not later than 22nd January, 1951. Candidates are invited to visit the Hospital by direct arrangement with the Surgeon-Superintendent, County Hospital, Doddington, Cambs.

K. V. F. MORTON, Secretary.
117, Chesterton-road, Cambridge.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. Required, 2 RESIDENT HOUSE SURGEONS, posts vacant 11th February and 9th March, 1951. 6 months' appointment. Salary £400–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 27th January, 1951. Candidates selected for interview will be notified by 3rd February, 1951.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. Required, RESIDENT HOUSE PHYSICIAN, post vacant 1st March, 1951. Salary £400–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c. 6 months' appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 27th January, 1951. Candidates selected for interview will be notified by 3rd February, 1951.

EXETER. PRINCESS ELIZABETH ORTHOPÆDIC HOSPITAL. (150 Beds with Annexe.) EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications invited for posts of 2 RESIDENT SENIOR HOUSE OFFICERS for the Orthopædic and Fracture Service centred on the Princess Elizabeth Orthopædic Hospital and Associated Hospital. These posts provide experience in the whole field of Orthopædics and opportunity for postgraduate study. Salary £670, less £100 for emoluments.

Applications, stating age, qualifications with dates, &c., and with copies of 3 recent testimonials, should be forwarded immediately to the Senior Administrative Officer, Princess Elizabeth Orthopædic Hospital, Exeter, Devon.

FARNBOROUGH HOSPITAL. (800 Beds.) Casualty OFFICER required. The post is tenable for 6 months. Salary £350–£450 p.a., less £100 a year in respect of board and lodging and other services provided.

Applications should be sent to the Administrative Officer, Farnborough Hospital, Farnborough, Kent, not later than 19th January, 1951.

FARNBOROUGH HOSPITAL, Kent. Applications invited from registered medical practitioners, including R practitioners within 3 months of qualification, for appointment of HOUSE OFFICER for E.N.T. duties. The appointment is for a period of 6 months and is recognised for the D.L.O. Salary £350–£450 a year, according to experience, less £100 for residential emoluments.

Applications, stating age, qualifications with dates, and experience, accompanied by the names and addresses of 3 referees, should be forwarded to the Administrative Officer, Farnborough Hospital, Farnborough, Kent.

FARNHAM HOSPITAL, Hale-road, Farnham, Surrey. SENIOR SURGICAL OFFICER for duties in wards and casualty. Appointment for 1 year. Salary £670 p.a.

Applications by letter, stating age, qualifications, experience, and present appointment, with 1–3 recent testimonials (copies), to the Medical Superintendent of the Hospital.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL. (120 Beds.) NORWICH, LOWESTOFT AND GREAT YARMOUTH (GROUP 6) HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female). Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments.

Applications to Secretary, Great Yarmouth and Gorleston General Hospital, Dene Side, Great Yarmouth.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Required, MEDICAL SENIOR HOUSE OFFICER (resident). The appointment, which is vacant now, is tenable for 1 year and subject to National Health Service terms and conditions. Salary £670 p.a., less a deduction for residence.

Apply, immediately, to the Administrative Officer, Grimsby General Hospital, Grimsby.

GUILDFORD. ST. LUKE'S HOSPITAL. Guildford GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON in the General Surgical Unit (66 Beds). This unit is recognised by the Royal College of Surgeons for the Fellowship. Salary and conditions in accordance with National Health Service scale and terms of appointment. The post is for a period of 6 months and falls vacant on 22nd February, 1951.

Applications, giving full details of qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded to the Physician-Superintendent as soon as possible.

HAILSHAM, SUSSEX. HELLINGLY MENTAL HOSPITAL. Required, HOUSE OFFICER at the above Hospital. Salary from £350–£450 p.a., according to number of posts held, less £100 p.a. in respect of board, lodging, &c. Terms and conditions of service in accordance with the hospital medical and dental staffs (England and Wales) recommendations of the Ministry of Health.

Applications, with the names of 2 referees, to be forwarded to the Medical Superintendent within 10 days of the appearance of this advertisement.

HALIFAX GENERAL HOSPITAL. Required, Pædiatric HOUSE PHYSICIAN (Male or Female). Salary according to experience.

Applications, enclosing 3 recent testimonials, to be forwarded to the Secretary at the Royal Halifax Infirmary.

HALIFAX GENERAL HOSPITAL. (425 Beds.) Required, HOUSE SURGEON (Male or Female). Salary according to experience.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to be addressed to the Secretary at the Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. Resident ANÆSTHETIST. Hospital providing large surgical turnover. Facilities available for practical experience under guidance of Consultant staff. Ample opportunities for studying for D.A.

Applications, stating age, sex, qualifications, and experience, with copies of 3 recent testimonials, to the Secretary, Halifax Area Hospitals Management Committee, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. Required, HOUSE SURGEON (Male) to the Ophthalmic and E.N.T Departments at this busy acute General Hospital. The post includes part-time casualty duty and is recognised for the D.O. and is vacant early January.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be forwarded to the Secretary.

HARROGATE ROYAL BATH HOSPITAL, Cornwall-road, HARROGATE. (146 Beds—this is a National Hospital for the treatment of rheumatism and allied diseases and is the centre of rheumatism research in the area.) Required, SENIOR HOUSE OFFICER (Surgical Orthopædic Unit). Previous orthopædic experience desirable but not essential. Salary at rate of £670 p.a., subject to a deduction in respect of board and lodging. The appointment is also subject to the National Health Service (Superannuation) Regulations, 1950.

Applications to be forwarded to the Secretary, Harrogate and Ripon Hospital Management Committee, Hereford Lodge, Cornwall-road, Harrogate, as soon as possible.

HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics). The person appointed will work under the direction of the Consultant Anæsthetist mainly at the Harrogate and District General Hospital, but will also be required, when necessary, to undertake duty at any of the other hospitals in the group. Salary £670 p.a., subject to a deduction in respect of board and lodging. The appointment will be subject to the passing of a medical examination and the provisions of the National Health Service (Superannuation) Regulations, 1950.

Applications, stating age, experience, and qualifications, to be forwarded to the Secretary, Harrogate and Ripon Hospital Management Committee, Hereford Lodge, Cornwall-road, Harrogate.

HASTINGS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (including practitioners within 3 months of qualification and liable under the National Service Acts) for appointments at the following hospitals and for service within the Hastings group of hospitals.

Royal East Sussex Hospital, Hastings

HOUSE SURGEON, now vacant.
HOUSE SURGEON, vacant 25th January, 1951.

Bexhill Hospital, Bexhill-on-Sea

HOUSE SURGEON, now vacant.
HOUSE SURGEON, vacant 14th February, 1951.

Buchanan Hospital, St. Leonards-on-Sea

HOUSE SURGEON, vacant 1st February, 1951.

Appointments for a period of 6 months. Salary will be within the scale £350–£400–£450 p.a., according to experience and posts held, less a deduction of £100 p.a. for full residential emoluments.

Applications should be sent to the Administrators of the respective hospitals. H. A. FROGGATT, Secretary.
11, Holmesdale-gardens, Hastings.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (160 Beds.) Applications invited for following appointments :—

RESIDENT SURGICAL OFFICER (Male). 6 months' appointment. Salary £450 p.a., less £100 p.a. for residential emoluments.

HOUSE SURGEON (Male or Female). 6 months' appointment. Salary £350–£450 p.a., according to previous posts held, less £100 p.a. for residential emoluments.

Applications in writing, stating age, qualifications with dates, and nationality, with copies of 3 testimonials, to be sent immediately, addressed to the undersigned at Pembroke County War Memorial Hospital, Haverfordwest.

A. W. YOUNGS, Secretary,
West Wales Hospital Management Committee.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Required, HOUSE SURGEON at the Sutton Branch Hospital, vacant February. Recognised for F.R.C.S. Salary £350–£450 p.a., according to the number of posts held. Appointment will be for 6 months, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Required, 2 CASUALTY OFFICERS (1 vacant now, 1 vacant February). Salary £350–£450, according to the number of posts held. Appointment will be for 6 months, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Required, OPHTHALMIC HOUSE SURGEON for duties at the Hull Royal Infirmary and the Victoria Hospital for Sick Children, vacant February. Recognised for D.O.M.S. Salary £350–£450 p.a., according to the number of posts held. Appointment will be for 6 months, terminable by 1 month's notice either side.

Forms of application from the Administrative Officer, Hull Royal Infirmary.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON required in the E.N.T. Department at the Hull Royal Infirmary and the Victoria Hospital for Sick Children. Recognised for D.L.O. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice on either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. ORTHOPÆDIC HOUSE SURGEON required, vacant now. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) HOUSE SURGEON required to commence duties on 22nd February, 1951. Salary in accordance with terms and conditions of service for hospital medical and dental staffs, with full residential emoluments.

Applications, together with copies of 3 recent testimonials, to be addressed as soon as possible to—

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) HOUSE PHYSICIAN required to commence duty 22nd February, 1951. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs.

Applications, together with copies of 3 recent testimonials, should be addressed to—

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) HOUSE SURGEON required to commence duties on 27th January, 1951. Salary in accordance with terms and conditions of service for hospital medical and dental staffs, with full residential emoluments.

Applications, together with copies of 3 recent testimonials, to be addressed as soon as possible to—

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HEMEL HEMPSTEAD. WEST HERTS HOSPITAL. (170 Beds.) WEST HERTS GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (second or third post), vacant 14th February, 1951. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, and giving full details of qualifications and previous experience, and accompanied by copies of 2 recent testimonials, should be submitted to the Administrator at the Hospital as soon as possible.

HEMEL HEMPSTEAD. WEST HERTS HOSPITAL. (170 Beds.) WEST HERTS GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (second or third post), vacant 14th February, 1951. The post offers excellent experience in general medicine. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, and giving full details of qualifications and previous experience, and accompanied by copies of 2 recent testimonials, should be submitted to the Administrator at the Hospital as soon as possible.

HEREFORD. GENERAL HOSPITAL. (154 Beds.) Required, HOUSE OFFICER (medicine), vacant as from 6th February, 1951. Salary at rate of £350 or £400 p.a., less emoluments. Conditions of service applicable to hospital medical and dental staffs (England and Wales).

Applications, with copies of 2 recent testimonials, should be sent to the Secretary, Herefordshire Hospital Management Committee, County Hospital, Hereford.

ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required for the Royal Isle of Wight County Hospital, Ryde (but may be required to serve at any Hospital within the Group). Post recognised for F.R.C.S. Vacant immediately. Salary £350, £400, or £450 p.a., according to experience. National terms of service.

Applications, stating age, qualifications, experience, and nationality, to H. FORSHAW, Chief Administrative Officer, Hospital Management Committee, St. Mary's Hospital, Newport, I.W., as soon as possible.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. House OFFICER (Anæsthetist), first, second, or third post, required in the Department of Anæsthesia. Hospital recognised for purpose of D.A. qualification. Resident or non-resident. Salary, terms, and conditions of service as approved for hospital medical staff.

Applications (endorsed "House Officer, Anæsthetist, W.M.H."), stating age, nationality, qualifications, and experience, with copies of up to 3 recent testimonials, to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13, closing date 30th January, 1951.

ISLE OF MAN. NOBLE'S HOSPITAL. Applications invited for post of HOUSE SURGEON (first post) in busy hospital with over 150 Beds and the usual ancillary departments. Post will provide ample and varied experience in pleasant surroundings. Salary £400 p.a., less £100 p.a. for board and lodging. Appointment for 6 months in first instance.

Applications, with copies of 2 recent testimonials, to the Secretary, Noble's Hospital, Douglas.

ILFORD. KING GEORGE HOSPITAL. There will be a vacancy for a CASUALTY OFFICER at the above Hospital on 31st January, 1951, at a salary of £670 p.a., less £120 p.a. emoluments.

Applications, giving full particulars, and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

G. AUSTIN HEPWORTH, Secretary, Ilford and Barking Group Hospital Management Committee.

King George Hospital, Ilford.

IPSWICH BOROUGH GENERAL HOSPITAL. RESIDENT ANÆSTHETIST HOUSE OFFICER required 17th January. Post recognised for D.A.

HOUSE SURGEON to General Surgeon required immediately. National salary scale.

Applications, with full particulars, to JOHN WILLIAMS, Secretary, Ipswich Group Hospital Management Committee at East Suffolk and Ipswich Hospital, Ipswich.

KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL. (124 Beds.) MID-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON, post vacant 24th January, 1951. Salary £350, £400, or £450 p.a. according to experience less £100 for residential emoluments. Practitioners within 3 months of qualification may apply, when appointment limited to 6 months.

Applications, with copies of recent testimonials, to be sent to the Administrative Officer at the above Hospital.

LANCASTER. ROYAL ALBERT HOSPITAL. The ROYAL ALBERT HOSPITAL MANAGEMENT COMMITTEE invite applications for the post of JUNIOR HOSPITAL MEDICAL OFFICER (Resident Medical Officer) at the Royal Albert Hospital for Mental Deficiency. Salary £700–£50–£1000 p.a. The post will be limited to 3 years' duration in the first instance. Appointment subject to provisions of National Health Service superannuation regulations and will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs under the National Health Service.

Applications should be forwarded to the Medical Superintendent not later than Thursday, 25th January, 1951.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). CASUALTY OFFICER. There are 2 Casualty Officers sharing the duties of the Casualty Department and acting as House Surgeon to Specialist beds. The present vacancy is for an officer to look after E.N.T., dermatology, and V.D. clinics and beds. Post suitable for candidates from the Services and those wishing to gain experience to enter general practice. Tenure of post 6 months. Salary, &c., in accordance with number of posts previously held and the terms and conditions of service of hospital medical and dental staffs.

Apply immediately to Miss V. WELLS, Assistant Secretary.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14).

CASUALTY OFFICER. There are 2 Casualty Officers sharing the duties of the Casualty Department and acting as House Surgeon to Specialist beds. The present vacancy is for an officer to look after ophthalmic, orthopædic, and physical medicine clinics and beds. Post suitable for candidates from the Services and those wishing to gain experience to enter general practice. Appointment to commence 22nd January, 1951. Tenure of post 6 months. Salary, &c., in accordance with the number of posts previously held and the terms and conditions of service of hospital medical staff.

RESIDENT ANÆSTHETIST (second or third post). 6 months' appointment commencing 23rd January, 1951. Post is recognised for the D.A. Salary £300 or £350, according to previous number of appointments held, plus full residential emoluments. R practitioners may apply.

Applications for both appointments should be made as soon as possible to Miss V. WELLS, Assistant Secretary.

Warneford General Hospital.

LEEDS. JEWISH HERZL MOSER HOSPITAL. Required, JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital for the treatment of both medical and surgical cases. The appointment will be for a period of 1 year in the first instance. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs—namely, on the scale £700–£50–£1000, according to previous service in the grade, with an appropriate deduction for services provided. Self-contained flat available suitable for a married or single person.

Forms of application, obtainable from the undersigned, should be completed and returned not later than 20th January, 1951.

J. FOLKARD, Secretary,

Leeds A Group Hospital Management Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS. PUBLIC DISPENSARY AND HOSPITAL. Required, SENIOR CASUALTY OFFICER (Male or Female) at the above Hospital. Appointment for a period of 1 year in the first instance, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely £670 p.a. (Senior House Officer grade).

Forms of application, available from the undersigned, should be completed and returned not later than 26th January, 1951.

J. FOLKARD, Secretary,

Leeds A Group Hospital Management Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the post of MEDICAL REGISTRAR to the Board for duties with the Bradford A Hospital Management Committee group. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the salary will be in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 3rd February, 1951. Canvassing in any form will disqualify.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of REGISTRAR to the Board in Anæsthetics for duties at hospitals within the Halifax Hospital Management Committee Group. Appointment will be for 1 year in the first instance. Remuneration in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation and the appointment will be subject to the National Health Service (Superannuation) Regulations, 1950.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 3rd February, 1951. Canvassing in any form will disqualify.

LEEDS REGIONAL HOSPITAL BOARD invites applications from registered medical practitioners for post of REGISTRAR in Psychiatry to the Board for duties at Scalebor Park Hospital, Burley-in-Wharfedale, near Leeds. The Hospital (289 Beds) provides accommodation for private and National Health Service patients, and has a large turnover of cases. All forms of active treatment are given. Facilities will be available for the successful candidate to take part in training in all aspects of psychiatry in conjunction with the University of Leeds, Department of Psychiatry. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the salary will be in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds 2, not later than 3rd February, 1951. Canvassing in any form will disqualify.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. Applications invited from registered medical practitioners (Male) for the appointment of RESIDENT AURAL OFFICER. Candidates must have held house appointments and have had some experience in E.N.T. work. The post is graded as for a Senior House Officer or a Junior Hospital Medical Officer according to qualifications and experience. There will be the possibility of advancement in due course to a training post for suitable candidates.

Applications, stating age, nationality, qualifications, and experience, together with the names of not more than 3 referees, should be sent to the undersigned not later than 10 days after the appearance of this advertisement.

S. CLAYTON FRYERS, Secretary to the Board of Governors.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Required, HOUSE OFFICER for Orthopædic and Fracture Department at the above Hospital. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 residential emoluments.

Applications, stating age, qualifications, and experience, should be forwarded to the undersigned, together with copies of 3 recent testimonials.

R. W. HOWICK, Secretary,

Lincoln No. 1 Hospital Management Committee.

County Hospital, Lincoln.

LINCOLN. COUNTY HOSPITAL. (200 Beds.) Required, HOUSE SURGEON at the above Hospital. 6 months' appointment. Salary at the rate of £350–£450 p.a., according to experience, less £100 residential emoluments.

Applications, stating age, qualifications, and experience, should be forwarded to the undersigned, together with copies of 3 recent testimonials.

R. W. HOWICK, Secretary,

Lincoln No. 1 Hospital Management Committee.

County Hospital, Lincoln.

LIVERPOOL. FAZAKERLEY HOSPITAL. Liverpool AND DISTRICT FAZAKERLEY GROUP HOSPITALS. Required, RESIDENT HOUSE PHYSICIAN at this Hospital, which is a teaching centre for infectious diseases in the University of Liverpool. Salary £350–£450 p.a., according to experience, less £100 p.a. for board-residence.

Applications to be submitted within 2 weeks of this advertisement to Physician-Superintendent, Fazakerley Hospital, Liverpool, 9.

LIVERPOOL AND DISTRICT EASTERN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the under-mentioned House Officer posts falling vacant on 1st April next :—

Broadgreen Hospital

(*a*) HOUSE PHYSICIANS.
(*b*) HOUSE SURGEONS.
(*c*) OBSTETRIC HOUSE SURGEONS.
(*d*) ADMISSION ROOM AND CASUALTY OFFICER.

Mill Road Maternity Hospital

(*e*) OBSTETRIC HOUSE SURGEON.

Salaries in accordance with the Ministry's scale—i.e., £350–£400–£450 p.a., according to previous experience, and, except in the case of post (*d*) which is non-resident, £100 p.a. will be deducted in respect of residential emoluments.

Applications, on forms obtainable from the undersigned, should be returned not later than 31st January, 1951.

H. BLYTHE, Secretary.

Broadgreen Hospital, Edge Lane-drive, Liverpool, 14.

LIVERPOOL, 14. BROADGREEN HOSPITAL. Required, RESIDENT MEDICAL OFFICER in the Thoracic Unit, post vacant on 1st April next. The post offers exceptional experience in all branches of chest work. Salary in accordance with the Ministry's scale for House Officers—i.e., £350–£400–£450 p.a., according to experience, and subject to a deduction of £100 p.a. in respect of residential emoluments.

Applications, on forms obtainable from the undersigned, to be returned not later than 31st January, 1951.

H. BLYTHE, Secretary.

Broadgreen Hospital, Edge Lane-drive, Liverpool, 14.

LIVERPOOL, 6. NEWSHAM GENERAL HOSPITAL. (1316 Beds.) Required, HOUSE PHYSICIAN. The Hospital is a large and active Geriatric Centre with acute medical, orthopædic, tuberculosis, dermatological, rehabilitation, and V.D. sections. Salary in accordance with the Ministry's scale for House Officers—i.e., £350–£400–£450 p.a., according to previous experience, and subject to a deduction of £100 p.a. in respect of residential emoluments if the applicant appointed is resident.

Applications, on forms obtainable from the undersigned, to be returned as soon as possible. H. BLYTHE, Secretary.

Broadgreen Hospital, Liverpool, 14, January, 1951.

LIVERPOOL, 6. NEWSHAM GENERAL HOSPITAL. (1316 Beds.) Required, SENIOR HOUSE OFFICER (Male or Female). The post involves duties in acute and chronic medical wards, and the candidate appointed may be resident or non-resident. Salary in accordance with the Ministry's scale—i.e., £670 p.a., less £100 p.a. if resident in respect of residential emoluments.

Applications, on forms obtainable from the undersigned, to be returned not later than 31st January next.

H. BLYTHE, Secretary.

Broadgreen Hospital, Liverpool, 14, January, 1951.

LOUTH, LINCS. COUNTY INFIRMARY. (240 Beds.) Required, RESIDENT SURGICAL OFFICER at the above Hospital. Salary and conditions according to the national scale —i.e., £700 p.a.–£50–£1000 p.a.

Applications, giving full details of age, qualifications, and previous experience, together with the names of 2 referees, to be addressed to the Administrative Officer, County Infirmary, Louth.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT. (99 Beds.) Required, HOUSE SURGEON (Male or Female). Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications with dates, nationality, with 3 recent testimonials, to the Secretary, Lowestoft and North Suffolk Hospital, Lowestoft.

LYMINGTON AND DISTRICT HOSPITAL, Lymington, HANTS. HOUSE PHYSICIAN and HOUSE SURGEON required, posts vacant 16th and 31st January respectively. Tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE (GROUP 13). Required, SENIOR HOUSE SURGEON in the E.N.T. Department at the above Hospital, which is recognised by the Royal College of Surgeons for the purposes of the D.L.O. Appointment for 12 months. Salary £670 a year, less £150 a year for residential emoluments, in accordance with the terms and conditions of service of hospital medical and dental staffs. Suitably qualified R practitioners holding second and third House Officer posts are invited to apply.

Applications, stating age, nationality, qualifications, experience, together with the names and addresses of 2 responsible persons to whom reference may be made as to professional ability and character, should be sent as soon as possible to the Secretary, Mid-Kent Hospital Management Committee, 103, Tonbridge-road, Maidstone, as soon as possible.

MANCHESTER, 4. ANCOATS HOSPITAL. Applications are invited for the posts of :—

HOUSE SURGEON to the Orthopædic and Fracture Department.

HOUSE SURGEON to the E.N.T. Department.

Vacancies exist as from 1st February, 1951.

Applications, stating age, experience, and names and addresses of 2 referees, to be addressed to the undersigned (Dept. T.L.) as soon as possible. JOHN H. DAFFORNE,

General Superintendent and Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time, non-resident post of SENIOR REGISTRAR in the Manchester Chest Diseases Team with duties at the Manchester Chest Clinic, Oxford-road, and at the Thoracic Surgery Units, Baguley Hospital and Park Hospital, Davyhulme. Salary £1000–£100–£1300. National terms and conditions of service applicable and the post is superannuable. The appointment will be made in the first instance for a period of 1 year, but is subject to renewal for a period of 3 years at the discretion of the Board.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 25th January, 1951. Canvassing will disqualify.

MANCHESTER, 19. THE DUCHESS OF YORK HOS-PITAL FOR BABIES. MANCHESTER BABIES' AND CHILDREN'S HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN (Male or Female) for 6 months from 15th February, 1951. Salary in accordance with Ministry's scale.

Applications, with copies of 3 testimonials, to be sent as soon as possible to the Administrative Officer at the Hospital.

MANCHESTER UNITED HOSPITALS. Manchester ROYAL EYE HOSPITAL. Required, HOUSE SURGEON. Salary £350–£450 p.a., according to the number of positions previously held, less £100 p.a. for residential emoluments. Appointment of a practitioner within 3 months of qualification and subject to National Service Acts would be limited to 6 months.

Applications, stating age, details of qualifications and experience, and nationality, should be forwarded immediately to H. R. NORTH, General Superintendent.

MANSFIELD. HARLOW WOOD ORTHOPÆDIC HOSPITAL, near MANSFIELD, NOTTS. (340 Beds.) Required, RESIDENT HOUSE SURGEON (second or subsequent post). Salary in accordance with National Health Service scale.

Applications, stating age, qualifications, experience, and enclosing copies of 2 recent testimonials, to be sent to Secretary.

MARGATE. THE GENERAL HOSPITAL. (132 Beds.) ISLE OF THANET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON. Appointment for a period of 6 months. Salary at rate of £350 p.a., less £100 for residential emoluments. R practitioners within 3 months of qualification may apply.

Applications, stating age, and qualifications, together with copies of 3 recent testimonials should be sent as soon as possible to the Administrator, The General Hospital, Margate.

MARKET DRAYTON. CHESHIRE JOINT SANA-TORIUM, near MARKET DRAYTON, SALOP. (305 Beds.) Required, HOUSE OFFICER (T.B.). Salary within the National Health Service scale, according to experience—i.e., £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, and full details of previous service, including national service, should be addressed to the Medical Superintendent at the Sanatorium, and forwarded without delay. THORNBURROW GIBSON, Secretary,

Stoke-on-Trent Hospital Management Committee.

MIDDLESBROUGH. POOLE SANATORIUM, Nun-THORPE, MIDDLESBROUGH. (315 Beds.) CLEVELAND HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident). Preference will be given to applicants who have held resident posts in a general hospital. Experience of tuberculosis an advantage but not essential. Salary in accordance with terms and conditions of service of hospital medical and dental staffs.

Applications, stating full particulars, with copies of 2 recent testimonials, should be sent to the Physician-Superintendent, Poole Sanatorium, Nunthorpe, Middlesbrough.

NORWICH. NORFOLK AND NORWICH HOSPITAL. (440 Beds.) Required, JUNIOR CASUALTY OFFICER (House Officer status). Post vacant 1st March, 1951. 6 months' appointment. Salary £350, £400, or £450 according to experience, less £100 p.a. for residence, &c.

Applications, stating age, qualifications, and experience, with names of 2 referees, to the Secretary, Norwich, Lowestoft and Great Yarmouth Hospital Management Committee, St. Stephen's-road, Norwich.

NORWICH. NORFOLK AND NORWICH HOSPITAL. (440 Beds.) HOUSE SURGEON (Male or Female), post vacant 1st March, 1951. Salary £350–£450 p.a. according to experience. £100 p.a. deduction for residential emoluments.

Applications, stating age, experience, qualifications, with names of 2 referees, to Secretary, Norwich, Lowestoft and Great Yarmouth Hospital Management Committee, St. Stephen's-road, Norwich.

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD invite applications for the following positions :—

(i) SENIOR REGISTRAR in Radiology (non-resident) at North Middlesex Hospital, Silver-street, Edmonton, N.18.

(ii) SENIOR REGISTRAR in Radiology (non-resident) at Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

(iii) SENIOR REGISTRAR in Radiology (resident) at Oldchurch Hospital, Romford, Essex.

(iv) MEDICAL REGISTRAR (pulmonary tuberculosis), resident, at Broomfield Hospital, near Chelmsford, Essex. The duties include the routine charge of 100 pulmonary tuberculosis patients, assisting the thoracic surgeon, and occasional duty, if necessary, with the mass-radiography unit and chest clinics.

(v) MEDICAL REGISTRAR (pulmonary tuberculosis), resident or non-resident, at Harold Court Hospital, Harold Wood, Hornchurch, Essex.

(vi) MEDICAL REGISTRAR (non-resident) at North Middlesex Hospital, Silver-street, Edmonton, N.18. Candidates should have good experience of general medicine and diseases of the lungs.

(vii) SURGICAL REGISTRAR (resident) at St. Mary's Hospital, Upper-road, Plaistow, E.13.

(viii) SURGICAL REGISTRAR (non-resident) at Chase Farm Hospital, The Ridgeway, Enfield, Middlesex, and other hospitals in the group.

Appointments are subject to annual review/review after 1 year, and the terms and conditions of service for hospital medical staff will apply. A local charge will be made for any residential amenities provided.

Separate applications in duplicate, stating date of birth, full details of qualifications, and experience, present appointment(s), grade and salary, together with 2 copies of 2 recent testimonials, should reach C. E. NICOL, Secretary, 11A, Portland-place, London, W.1, by 27th January, 1951. Canvassing disqualifies.

NOTTINGHAM GENERAL HOSPITAL. Required, JUNIOR CASUALTY OFFICER (first post), Male or Female, for the above Hospital. Duties to commence as soon as possible. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, and nationality, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary,

Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, CASUALTY OFFICER. Duties to commence on the 23rd January, 1951. Salary £350–£450 p.a., according to experience, less £100 emoluments. If held by a practitioner who is liable under the National Service Acts, the appointment will be for 6 months, otherwise renewable. Terms and conditions of service as laid down by Ministry Regulations.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY,
Nottingham No. 1 Hospital Management Committee.
General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Required, HOUSE SURGEON (first post), Male or Female, for the above Hospital, duties to commence as soon as possible. Salary and conditions of service in accordance with the published conditions of the Ministry of Health, less £100 p.a. for emoluments. If held by an R practitioner the appointment will be for a period of 6 months.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NORTHAMPTON GENERAL HOSPITAL. (487 Beds.) NORTHAMPTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Required, ORTHOPÆDIC HOUSE SURGEON, post vacant about the middle of February next. Recognised for the F.R.C.S. Appointment will be made for period to 30th September, 1951. Ministry of Health salary scale, with deduction of £100 a year for residential emoluments.

Applications, giving full particulars, and enclosing copies of 3 recent testimonials, should be received by the undersigned before or on 18th January, 1951.

S. G. HILL, Secretary to the Management Committee.

ORMSKIRK. COUNTY HOSPITAL, Wigan-road. (400 Beds.) Applications invited for appointment of HOUSE SURGEON for general duties, vacant immediately, and tenable for 6 months. Salary £350–£450 p.a., according to experience, with a deduction of £100 p.a. for residential emoluments. [A sum of £50 p.a. has been authorised to be added to the regulation salary quoted above.

Applications, with full details, should be forwarded as soon as possible to— H. E. BECK, Secretary, Ormskirk and District Hospital Management Committee.
County Hospital, Ormskirk, Lancs.

OXFORD. THE UNITED OXFORD HOSPITALS. Applications invited for the posts of HOUSE SURGEONS to the Departments of Thoracic Surgery and Plastic Surgery at the Churchill Hospital.

Applications, stating age, qualifications, and experience, together with the names of 2 referees, should be addressed as soon as possible to A. G. E. SANCTUARY, Administrator.
The Radcliffe Infirmary, Oxford.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited for the following non-resident posts which will be in the grade of Registrar or Senior Registrar according to qualifications and experience. They will be for 1 year and eligible for extension for the normal tenure :—

REGISTRAR in Anæsthetics.
REGISTRAR in Otolaryngology.
REGISTRAR in Ophthalmology at the Oxford Eye Hospital.
REGISTRAR in Department of Pathology.

Applications for each of the above posts on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 27th January, 1951.

PENZANCE. WEST CORNWALL HOSPITAL. (General Hospital—100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female), post vacant now. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be forwarded to the Administrative Assistant, West Cornwall Hospital, Penzance.

PONTYPRIDD. CHURCH VILLAGE GENERAL HOSPITAL. (310 Beds—Committee's Base Hospital serving population of 177,000.) Required, 2 HOUSE OFFICERS (surgical), first posts. 6 months' appointments to commence in January, 1951. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Applications, stating age, qualifications, together with copies of 2 recent testimonials, to be sent immediately to the Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PONTYPRIDD. CHURCH VILLAGE GENERAL HOSPITAL. (310 Beds—Committee's Base Hospital serving population of 177,000 ; 8 Resident Medical Staff.) Required, HOUSE OFFICER (medical), first or second post. 6 months' appointment. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Applications, stating age, qualifications, and experience, with names of 2 referees, to be sent as soon as possible to the Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PONTYPRIDD. CHURCH VILLAGE GENERAL HOSPITAL. (310 Beds—Committee's Base Hospital serving population of 177,000.) Required, HOUSE OFFICER (surgical), second or third post. Duties to include anæsthetics and service in the Casualty Department. 6 months' appointment. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Applications, stating age, qualifications, and experience, with names of 2 referees, to be sent as soon as possible to the Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (115 Beds.) Required, HOUSE OFFICER (surgical), post vacant from 12th February. Salary £350–£450 p.a., in accordance with the number of previous posts held, less a deduction of £100 p.a. for full residential emoluments.

Apply, with the names of 2 persons for reference, to—
17, Cardiff-road, Newport, Mon. T. A. JONES, Secretary.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (115 Beds.) Required, HOUSE OFFICER (medical), post vacant from 1st February. Appointee will work under the directions of the Consultant Physician and the Pædiatrician. Salary £350–£450 p.a., in accordance with the number of previous posts held, less a deduction of £100 p.a. for full residential emoluments.

Apply, with names of 2 persons for reference, to—
17, Cardiff-road, Newport, Mon. T. A. JONES, Secretary.

PLYMOUTH SPECIAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for appointment of SENIOR HOUSE OFFICER (resident), Male, at the Isolation Hospital, Beacon Park-road, Plymouth, from registered medical practitioners who have had a minimum of 1 year's hospital experience. A knowledge of infectious diseases and pædiatrics desirable, but not essential, and the applicant should be able to drive a car. The duties will be chiefly in connection with infectious and venereal diseases and the varied clinical work including acute medical cases and early pulmonary tuberculosis provides valuable medical experience in both departments particularly for those reading for a higher degree. The appointment will be for 1 year, terminable by 1 month's notice on either side. Salary £670, less a deduction of £100 for full residential emoluments. There is no accommodation available for a married man.

Applications, together with copies of 3 recent testimonials, should be sent to the Secretary, Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth, not later than 22nd January, 1951.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications invited from registered medical practitioners for appointments of :—

(1) HOUSE SURGEONS (first posts), Greenbank Road Section, vacant 1st and 7th February, 1951.
(2) HOUSE SURGEON (second or third posts), Devonport Section, vacant immediately.
(3) HOUSE SURGEON (second or third posts), Freedom Fields Section, vacant immediately.
(4) ANÆSTHETIC HOUSE OFFICER (second or third posts), Freedom Fields Section, vacant 1st March, 1951.

DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY.

(5) HOUSE SURGEON (second or third posts), Alexandra Maternity Home, Devonport, vacant 17th February, 1951.
(6) HOUSE SURGEON (second or third posts), Freedom Fields Section, vacant 1st March, 1951. Wide experience can be obtained in obstetrics, including ante- and post-natal clinics.

Appointments for 6 months and terminable by 1 month's notice on either side. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, nationality, qualifications, and experience, with 3 recent testimonials, to be sent by 30th January, 1951, to—

ARTHUR R. CASH, Secretary, Plymouth, South Devon and East Cornwall General Hospital Group.
Head Office, Greenbank-road, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Royal Portsmouth Hospital (305 acute Beds)

ORTHOPÆDIC HOUSE SURGEON required, vacant 3rd February, 1951. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

SENIOR HOUSE OFFICER, Casualty Department, required, vacant 22nd February, 1951. Salary £670 p.a., less £150 for residential emoluments.

HOUSE SURGEON required, vacant now. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

Saint Mary's Hospital (1100 general Beds)

HOUSE SURGEON required, vacant 1st March, 1951. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

Gosport War Memorial Hospital (68 general Beds)

HOUSE SURGEON required, vacant now. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

All applications should give details of age, experience, and qualifications, and the names of 2 referees, and should be submitted to the Secretary, 35, Grove Road-south, Southsea.

PRESTON. WHITTINGHAM HOSPITAL, near Preston, LANCASHIRE. The Management Committee of the above Hospital invites applications for the post of HOUSE PHYSICIAN (either sex) who must be resident, from doctors who have held 2 previous hospital appointments. Salary £450 p.a. A charge of £100 p.a. will be made for board, residence, and laundry. Conditions of service are those made applicable to the post by the Ministry of Health. The Medical Officers' Quarters are well appointed and comfortable.

Applications to be made to the Chairman, Whittingham Hospital Management Committee, and to be sent as soon as possible to—

W. A. HIGGS, Secretary of the Management Committee.

REDRUTH. CAMBORNE-REDRUTH MINERS' AND GENERAL HOSPITAL. WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, FIRST HOUSE SURGEON (Male or Female) to the Obstetric and Gynæcology Departments, commencing 1st March, 1951. Salary and conditions in accordance with Ministry of Health regulations. The Hospital has been recognised in obstetrics for M.R.C.O.G.

Applications, stating age, qualifications, and experience, and accompanied by copies of 3 recent testimonials, should be sent to the Administrative Assistant by 31st January, 1951.

RAMSGATE. THE GENERAL HOSPITAL. (101 Beds.) ISLE OF THANET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON. Appointment will be for a period of 6 months. Salary at rate of £350 p.a., less £100 for residential emoluments. R practitioners within 3 months of qualification may apply.

Applications, stating age, and qualifications, together with copies of 3 recent testimonials, should be sent as soon as possible to the Administrator, The General Hospital, Ramsgate.

RHONDDA. PORTH AND DISTRICT HOSPITAL. (110 Beds.) Required, JUNIOR HOSPITAL MEDICAL OFFICER (surgical). Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Applications, stating age, qualifications, experience, together with copies of 2 recent testimonials, to be sent immediately to the Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for position of SENIOR HOUSE OFFICER (chest diseases). Previous experience desirable. The successful applicant will be a member of the chest team for the Rochdale group of hospitals and will be required to reside at Wolstenholme Pulmonary Hospital. The appointment is for 1 year and the salary will be £670 p.a., less a deduction for board and lodging.

Applications, stating age, qualifications, experience, and giving the names of 2 referees, should be sent to the undersigned immediately. S. HODKINSON, Secretary.

Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHDALE. BIRCH HILL HOSPITAL. Required, JUNIOR HOSPITAL MEDICAL OFFICER. The post is a new one and the person appointed will work under the 2 Consultant Physicians and will have particular responsibility for wards dealing with the chronic sick. The salary will be in accordance with the terms and conditions laid down by the Ministry of Health and the position may be resident or non-resident as the candidates wish.

Applications should be forwarded to reach the undersigned within 14 days of the appearance of this advertisement and should be accompanied by full particulars including age, experience, and the names of 2 referees.

S. HODKINSON, Secretary,
Rochdale and District Hospital Management Committee.
Central Offices, Birch Hill Hospital, Rochdale,
29th December, 1950.

ROCHDALE. BIRCH HILL HOSPITAL. (General—956 Beds.) Applications are invited for appointment of SENIOR HOUSE SURGEON. The appointment will be for 1 year. Salary in accordance with the terms of service of hospital medical staff in the National Health Service, i.e., £670 p.a. This appointment is recognised by the Royal College of Surgeons for 6 of the 12 months' period of surgical training required of candidates for the final fellowship examinations.

Applications should be sent to the undersigned immediately.

S. HODKINSON, Secretary, Rochdale and
District Hospital Management Committee.
Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE INFIRMARY. (General—109 Beds.) Required, CASUALTY HOUSE SURGEON. The appointment will be for 6 months. Salary in accordance with the terms of service for hospital medical staff in the National Health Service—i.e., £350, £400, or £450 p.a., according to previous experience. This appointment is recognised by the Royal College of Surgeons for 6 of the 12 months' period of surgical training required of candidates for the final fellowship examinations.

Applications should be sent immediately to—

S. HODKINSON, Secretary, Rochdale and
District Hospital Management Committee.
Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE INFIRMARY. (General—109 Beds.) Required, SENIOR HOUSE OFFICER (orthopædic). The appointment will be for 1 year. Remuneration will be at rate of £670 p.a., and the conditions of service will be in accordance with the terms of service for hospital medical staff in the National Health Service.

Applications should be sent immediately to—

S. HODKINSON, Secretary, Rochdale and
District Hospital Management Committee.
Central Offices, Birch Hill Hospital, Rochdale.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (718 Beds.) Required, HOUSE SURGEON at above Hospital. Resident post tenable for 6 months. Salary, &c., as per Ministry of Health scale for House Officers, less £100 a year for board and lodging, &c.

Applications, stating age, qualifications with dates, present appointment, and experience, with copies of 2 testimonials of recent date or names of 2 referees, should reach the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, not later than 26th January, 1951.

SCARBOROUGH HOSPITAL, Yorkshire. (163 Beds.) Applications invited from Male or Female registered medical practitioners for post of RESIDENT HOUSE PHYSICIAN. Salary in accordance with the national scale and the appointment will be for 6 months.

Applications, stating age and qualifications, with testimonials, to be sent to the Secretary.

SALISBURY GENERAL HOSPITAL. (Salisbury Infirmary and Odstock Hospital—470 Beds.) Required, RESIDENT HOUSE SURGEON. Appointment vacant on 14th February, 1951, and is for a period of 6 months. Salary and conditions of service are in accordance with the terms for medical staff in hospitals.

Applications, together with copies of 2 recent testimonials, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, not later than the 24th January, 1951.

SALISBURY GENERAL HOSPITAL. (Salisbury General Infirmary and Odstock Hospital—470 Beds.) Required, RESIDENT HOUSE SURGEON to the E.N.T. Department. The department is now officially recognised for the D.L.O., and consists of 40 Beds together with busy outpatient and audiometric clinics. The appointment is for a period of 6 months and is now vacant. Salary and conditions of service in accordance with the terms for medical staff in hospitals.

Applications, together with copies of 2 recent testimonials, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, not later than 24th January, 1951.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. (Incorporating Salisbury General Infirmary and Odstock Hospital.) Required, RESIDENT ANÆSTHETIST (Senior House Officer), for duties at both branches of the Salisbury General Hospital. Appointment vacant on the 4th February, 1951, and is for a period of 12 months. Salary and conditions of service in accordance with the terms for hospital medical staff.

Applications, giving details of qualifications, and experience in the specialty, together with the names of 3 referees, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, to be received not later than 24th January, 1951.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD, 11, Drumsheugh-gardens, EDINBURGH, 3. Applications invited for appointment of REGISTRAR in the Department of Tuberculosis at Bangour Hospital, West Lothian. The appointment will be for 1 year in the first instance, with the possibility of an extension for a second year. Salary and conditions of service will be in accordance with the regulations.

Applications (14 copies), giving particulars of age, previous experience, and qualifications, together with the names of 3 referees, should reach the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, within 30 days.

SCOTLAND. RENFREWSHIRE MENTAL HOSPITAL BOARD. Applications invited for the post of RESIDENT HOUSE OFFICER at each of the following hospitals :—

Dykebar Mental Hospital, Paisley.
Riccartsbar Mental Hospital, Paisley.
Ravenscraig Mental Hospital, Greenock.

Each post is tenable for a period of 6 months, in the first instance. Salary at rate of £350–£450 p.a., according to experience, less deduction of £100 for board, lodging, &c. The appointments will be subject to the National Health Service (Scotland) superannuation regulations.

Applications, stating age, qualifications, experience, and present appointment, and giving names of 3 referees, should be sent at once to the Secretary, Dykebar Hospital, Paisley.

SCOTLAND. VICTORIA HOSPITAL, Kirkcaldy, Fife-SHIRE. (65 Medical Beds.) Applications invited for 2 RESIDENT HOUSE PHYSICIANS (Male or Female) in the above Hospital to the acute Medical Unit in the charge of the Consultant Physician for the East Fife group of hospitals. Appointments to date from 1st April, 1951, and tenable for 6 months. Salary and conditions of service in accordance with national scale.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, to be sent to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy, by 1st February, 1951.

SCOTLAND. RED CROSS SANATORIA OF SCOTLAND. (156 Beds.) Applications invited for post of JUNIOR ASSISTANT MEDICAL OFFICER to the above Sanatoria at a salary of £670 p.a., less a deduction for full residential emoluments. A Thoracic Surgical Unit is situated at the Sanatoria. Experience in general medicine essential and in the treatment of pulmonary tuberculosis desirable.

Apply, giving full particulars of qualifications, and experience, together with the names of 2 referees, to the Medical Director, Tor-na-Dee, Milltimber, Aberdeenshire, before 20th January, 1951.

SHEFFIELD. NETHER EDGE HOSPITAL. Applications invited from suitably qualified practitioners for the resident post of SENIOR HOUSE OFFICER. Main duties will be in connection with the new maternity unit but will also be required to assist in the wards for long-stay medical cases and may also be required to assist in the new Rheumatism Research Unit. Tenable for 1 year. Salary £670 p.a.

Forms of application may be obtained from the undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY UNIT. Applications invited from registered medical practitioners for the non-resident post of REGISTRAR to the Orthopædic Department at the above Hospital.

Applications, stating age, qualifications, and experience, together with the names of 3 referees, should be forwarded immediately to—

JOSEPH GRIFFITH, Chief Administrative Officer.
The United Sheffield Hospitals.
Central Office, The Royal Hospital, Sheffield, 1.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) RESIDENT ANÆSTHETIST required. Appointment in accordance with terms and conditions of service for hospital medical and dental staffs, and £100 p.a. will be deducted for residential emoluments. Post recognised for the D.A.

Applications, stating age, nationality, qualifications, and previous hospital appointments, accompanied by copy testimonials, should be sent as soon as possible to—

J. P. MALLETT, Secretary,
Shrewsbury Group 15 Hospital Management Committee.
Royal Salop Infirmary, Shrewsbury, 30th December, 1950.

SHREWSBURY. ROYAL SALOP INFIRMARY. (240 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER (Male or Female), vacant immediately. Salary £350–£450 p.a., less a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications, nationality, and experience, accompanied by copy testimonials, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Secretary.

Royal Salop Infirmary, Shrewsbury, 23rd September, 1950.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (256 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the following appointments at above Hospital:—

(*a*) HOUSE SURGEON, with associated duties in E.N.T., now vacant.

(*b*) HOUSE SURGEON, with associated duties in gynæcology and radiotherapy, vacant 4th February.

(*c*) CASUALTY OFFICER, vacant 12th February, busy department.

(*d*) HOUSE PHYSICIAN, vacant 25th January. The medical department has large outpatient clinics and a quick turnover of inpatients.

National terms and conditions of service.

Applications, with copy testimonials or names of 2 referees, to the Secretary, The War Memorial Hospital, Scunthorpe, Lincs.

SOUTHAMPTON BOROUGH GENERAL HOSPITAL. HOUSE SURGEON (resident) required immediately. Post tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON CHILDREN'S HOSPITAL. Required, HOUSE OFFICER, post vacant early March, 1951. Salary in accordance with national scale. Preference given to those intending to specialise in pædiatrics. Hospital recognised by Conjoint Board for D.C.H.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of 3 testimonials, should be forwarded to reach the Secretary at the Southampton Children's Hospital not later than 3rd February, 1951.

SOUTHAMPTON INFECTIOUS DISEASES HOSPITAL AND SANATORIUM. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited from appropriately qualified and experienced persons for appointment of MEDICAL REGISTRAR (resident). Applicants should have had experience in the treatment of infectious diseases and pulmonary tuberculosis. A Thoracic Unit is in the process of being developed and the appointment may entail certain medical duties associated with that Unit. Salary and conditions of service will be in accordance with the agreed terms and conditions of service of hospital medical staff. The provisions of the National Health Service superannuation regulations will apply.

Forms of application, which will be forwarded by the undersigned on receipt of a stamped envelope, must be returned within 14 days of publication of this advertisement. Canvassing will be a disqualification, but candidates are not thereby precluded from visiting the Hospital.

FRANK JENNINGS, Secretary,
Southampton Hospital Management Committee.
Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (290 Beds.) HOUSE SURGEONS (3) required. Posts now vacant and mid-January. Tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Required, HOUSE OFFICER (medical), Male or Female, post vacant in the near future. Salary in accordance with national scale for House Officers. Appointment for 6 months in the first instance. Applications from recently qualified medical practitioners will be considered.

Applications, giving age, qualifications, and particulars of previous experience, including national service, if any, with copy testimonials, should be forwarded to the Medical Superintendent, City General Hospital, Stoke-on-Trent.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (1000 Beds.) Applications invited for 2 HOUSE OFFICERS (surgical), Male or Female, now vacant. Posts recognised for F.R.C.S. Salary in each case in accordance with National Health Service scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including national service, to the Medical Superintendent at the Hospital.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. BURSLEM HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. HOUSE OFFICER (medical) required, post vacant very shortly. Salary in accordance with the National Health Service scale for House Officers.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including national service, as soon as possible to— THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts within group hospitals :—

North Staffordshire Royal Infirmary (475 Beds)
HOUSE OFFICER (orthopædic), first post.
HOUSE OFFICER (E.N.T.), second or third post. Recognised for D.L.O.
HOUSE OFFICER (general surgery), second post. Recognised for F.R.C.S.
HOUSE OFFICER (surgical), first post, combining main duties at Longton Hospital (55 Beds).

Bucknall Isolation Hospital (202 Beds)
HOUSE OFFICER (medical), second or third post.

Salary in all cases in accordance with national scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including national service, to the undersigned at Princes-road, Stoke-on-Trent.

THORNBURROW GIBSON, Secretary.

ST. ALBANS CITY HOSPITAL. Required, Casualty OFFICER (Male). Appointment for 6 months in the first instance. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications should be addressed to the Secretary, Osterhills Normandy-road, St. Albans.

ST. HELENS HOSPITAL. (183 Beds.) Required, Resident HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications to be forwarded as soon as possible to—
N. RICHARDS, Secretary, St. Helens and
District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs.

ST. HELENS. ECCLESTON HALL HOSPITAL. Required, SENIOR HOUSE OFFICER at the above Hospital. Salary £670 p.a., less £150 p.a. for residential emoluments. The person appointed will work under the supervision of the Tuberculosis Medical Officer, who is also on the staff of this Hospital. There are 75 Beds and the work comprises all types of tuberculosis. The appointment may also include duties at another hospital in the group which is about to be converted for the treatment of tuberculosis. Good residential accommodation for a single person, male or female, is available.

Applications to be forwarded immediately to—
N. RICHARDS, Secretary, St. Helens and
District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON in the Neuro-surgical Department (second or third appointment). Salary and conditions of service will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON (first or second appointment). Salary and conditions of service will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT CASUALTY OFFICER (second or third appointment). Salary and conditions of service will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWINDON HOSPITALS. Accident and Orthopædic DEPARTMENTS. Required, RESIDENT HOUSE SURGEON to above, which are associated with the Wingfield-Morris Orthopædic Hospital, Oxford. Salary in accordance with the approved terms, including additional £50 p.a.

Applications, giving age, qualifications, and details of service, with names of 1–3 referees, should be sent to the Secretary, Swindon and District Hospital Management Committee, Victoria Hospital, Swindon, as soon as possible.

VENTNOR. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST, ISLE OF WIGHT. (250 Beds.) VENTNOR HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (resident), unmarried, post vacant 1st March. Hospital has all facilities for major thoracic surgery.

Applications, stating age, qualifications, experience, nationality, and names of 2 referees, should be sent to the Physician-Superintendent.

TAPLOW, MAIDENHEAD, BERKS. CANADIAN RED CROSS MEMORIAL HOSPITAL. ORTHOPÆDIC HOUSE SURGEON required, post vacant 7th February. National salary scale.

Applications, giving details of age, qualifications, and experience, with dates, together with copies of 2 testimonials to be sent to the Administrative Officer.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—230 Beds ; 7 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, CASUALTY HOUSE SURGEON (Male or Female), post vacant 7th February, 1951. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, giving details of age, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary Truro.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—230 Beds ; 7 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications invited for vacant post of HOUSE SURGEON (Male or Female) for General Surgery and Gynæcology. The successful candidate will be responsible jointly with the House Surgeon for the 74 Beds allocated to the 2 specialties. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, stating age, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary, Truro.

WARWICK HOSPITAL. (253 Beds.) South Warwickshire HOSPITAL GROUP NO. 14. Required, RESIDENT HOUSE SURGEON (Male or Female). Good experience in general and thoracic surgery units. Salary at the rate of £350–£450, depending upon experience, less £100 p.a. for residential emoluments.

Applications, with 2 recent testimonials, should be sent to the Medical Superintendent, Warwick Hospital, Lakin-road, Warwick.

WARWICK HOSPITAL. (253 Beds.) South Warwickshire HOSPITAL GROUP NO. 14. Required, RESIDENT SECOND ORTHOPÆDIC HOUSE SURGEON. Well-equipped Orthopædic and Fracture Unit of 51 Beds linked with Casualty Department. Salary £350–£450, according to experience, less £100 for residential emoluments.

Applications, with 2 recent testimonials, should be forwarded to the Medical Superintendent, Warwick Hospital, Lakin-road, Warwick.

WHISTON. COUNTY HOSPITAL. (880 Beds.) Required, RESIDENT HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications to be forwarded to the undersigned as soon as possible.

N. RICHARDS, Secretary, St. Helens and District Hospital Management Committee.

Group Office, County Hospital, Whiston, near Prescot, Lancs.

WICKFORD. RUNWELL HOSPITAL, near Wickford, ESSEX. (1032 Beds.) Required, SENIOR HOUSE OFFICER. There are excellent opportunities for up-to-date experience and postgraduate instruction is given in modern psychiatric methods including treatment of neuroses. Opportunities will be given at the Hospital for clinical instruction for the D.P.M. Salary at rate of £670 p.a., less £180 for residential emoluments.

Applications, stating age, &c., together with copies of testimonials, should be sent to the Secretary as soon as possible.

T. FITZROY KELLY, Secretary.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. RESIDENT ANÆSTHETIST required at above Hospital. Appointment in accordance with terms and conditions of service for hospital medical and dental staffs, and £100 p.a. will be charged for residential accommodation.

Applications, stating age, nationality, qualifications, and previous hospital appointments, with names of 2 referees, should be forwarded as soon as possible to—

T. W. HURST, Secretary,
Wigan and Leigh Hospital Management Committee
Knowsley House, Wigan.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOS-PITAL. (326 Beds.) WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required, vacant 1st March. General surgery and work in the E.N.T. Department. Salary at the rate of £350, £400, or £450 a year, according to experience, less £100 for board and residence.

Applications, together with 2 testimonials, should be sent to the Secretary.

WOLVERHAMPTON HOSPITAL MANAGEMENT COM-MITTEE, GROUP NO. 16, BIRMINGHAM REGION. Applications invited from registered medical practitioners for following appointments :—

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

HOUSE SURGEON (Fracture and Orthopædic Department), vacant now.

SENIOR HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.

HOUSE SURGEON (Ear, Throat and Nose Department), vacant now.

SENIOR HOUSE OFFICER (Ear, Throat and Nose Department), vacant 1st February, 1951.

HOUSE PHYSICIAN, vacant shortly.

HOUSE PHYSICIAN (pædiatric). Appointment recognised for D.C.H., vacant shortly.

HOUSE SURGEONS (general surgery), vacant shortly.

The Royal Hospital (Women's Branch), recognised for the examination of M.R.C.O.G.

RESIDENT MEDICAL OFFICER, vacant shortly.

New Cross Hospital, Wolverhampton

HOUSE PHYSICIAN, vacant 1st February, 1951.

All appointments subject to terms and conditions of service issued by the Ministry of Health.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.

The Royal Hospital, Wolverhampton.

WORCESTER ROYAL INFIRMARY. South Worcester-SHIRE HOSPITAL MANAGEMENT COMMITTEE. Required, SENIOR RESIDENT HOUSE OFFICER (medical), post vacant 20th January. There are 44 acute medical beds at the Infirmary. The post involves duties at neighbouring hospitals ; these are : Newtown Isolation Hospital (40 fever beds) and Shrub Hill Hospital for the Chronic Sick (110 Beds). Appointment for 1 year in the first instance and the salary will be £670 p.a.; a deduction of £130 p.a. being made for board and lodging.

Applications, with copies of 3 testimonials, should be sent to the Secretary, Worcester Royal Infirmary.

WORCESTER ROYAL INFIRMARY. (300 Beds.) Required, HOUSE SURGEON (general surgery), post now vacant. The appointment is for 6 months and the terms are in accordance with the terms and conditions for hospital medical staff.

Applications, with full details and copies of testimonials, should be sent to the Secretary.

WAKEFIELD. GENERAL HOSPITAL, Park Lodge-lane. Required, HOUSE PHYSICIAN for the Medical Unit and with some anæsthetic duties and to work under the supervision of the Medical Superintendent, appointment vacant immediately. The post is resident and the salary scale £350–£450 p.a., according to experience, less £100 as residential emoluments.

Applications should be addressed to the Medical Superintendent. W. READ, Secretary, Hospital Management Committee No. 9, Wakefield A Group.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the following posts :—

County Hospital, York (General Hospital of 269 Beds)

City Hospital, York (Modern General Hospital of 265 Beds)

E.N.T. HOUSE SURGEON. The E.N.T. Department which is mainly at the County Hospital, York, has approximately 30 Beds, is recognised for the D.L.O., and offers excellent opportunities for learning the specialty. The appointment is for 6 months initially, previous experience preferable but not essential. Post vacant from 16th January, 1951. Salary £400 for second post held, £450 for third post, less £100 for residence.

Military Hospital, York (Civilian Wing) (52 Beds)

RESIDENT MEDICAL OFFICER. This Hospital is an annexe to the County Hospital, York. There are 14 gynæcological beds, 28 surgical beds, and 10 medical beds. The post is graded Senior House Officer, is for 6 months in first instance, and is vacant on 21st January, 1951. Salary £670, with a deduction for residence.

County Hospital, York (General Hospital of 269 Beds with full Consultant staff)

CASUALTY OFFICER (with charge of orthopædic beds). Post is graded House Officer (second, third, or subsequent post) and is vacant on 17th January, 1951, for 6 months. Salary £400 for second post, £450 for third or subsequent post, less £100 for residence. Residential accommodation is available, but special arrangements can be made if the applicant wishes to be non-resident, or partly resident.

County Hospital, York (General Hospital of 269 Beds)

City Hospital, York (Modern General Hospital of 265 Beds)

Yearsley Bridge Hospital, York (Infectious Diseases Hospital of 86 Beds)

JUNIOR HOSPITAL MEDICAL OFFICER (pædiatrics and infectious diseases) to spend approximately half of time in connection with pædiatric duties at the County Hospital (22 pædiatric beds), City Hospital (32 pædiatric beds), and other hospitals in the group, and approximately half of time at Yearsley Bridge Hospital. Candidates should have had previous experience of pædiatrics and infectious diseases. Preference will be given to the holders of the D.C.H. The post is vacant immediately and the appointment is for 1 year in the first instance. Residential accommodation available ; otherwise applicant will be required to live near Hospital. Salary £700–£50–£1000, with deduction if resident. Terms and conditions of service are those laid down by the Minister of Health.

Applications, giving details of age, nationality, qualifications, and experience, together with the names of 2 referees, to be forwarded immediately to—

F. A. MILNES, F.H.A., A.L.A.A., Secretary,
York A and Tadcaster Hospital Management Committee.
Bootham Park, York.

NEW JERSEY. ST. ELIZABETH HOSPITAL, 204 South Broad-street, ELIZABETH 2, N.J. Large Hospital, 275 Beds, general rotating service of 1 year ward and private in all branches of medicine and surgery, including the specialties and contagious pavilion. Metropolitan area of New Jersey, 15 miles from New York City, grade A applicants from grade A schools ; frequent clinical conferences ; weekly seminar ; excellent medical and surgical library ; salary $100 per month,, with full maintenance.

Apply to Chairman, Intern Committee, St. Elizabeth Hospital, Elizabeth, New Jersey.

Public Appointments

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Applications are invited from registered medical practitioners for the whole-time appointment of SENIOR ASSISTANT MEDICAL OFFICER OF HEALTH for Mental Health. Applicants should have had special experience in all branches of the Mental Health Service and should hold the D.P.M. The successful candidate will be responsible to the Medical Officer of Health for the general administration and medical direction of all branches of the Council's Mental Health Services and for the performance of such other duties in this connection as may be required. The salary will be on the scale £1250–£50–£1500, the commencing salary to be fixed within this scale in accordance with the applicant's experience. A motor-car allowance scheme is in operation for officers using their own cars for official duties. The candidate selected will be required to pass a medical examination, and to contribute to the Local Government Superannuation Act, 1937, and to the Birmingham Municipal Officers Widows and Orphans Pensions Fund. The appointment is terminable at 3 months' notice.

Applications, accompanied by not more than 3 recent testimonials and endorsed on the envelope "Senior Assistant Medical Officer of Health for Mental Health," should be forwarded to the Medical Officer of Health, Public Health Department, Congreve-street, Birmingham, 3, not later than 20th January, 1951. Canvassing, directly or indirectly, will lead to disqualification.

BOARD OF CONTROL. Applications are invited for the post of SENIOR HOUSE OFFICER or JUNIOR HOSPITAL MEDICAL OFFICER at Moss Side Hospital, Maghull, near Liverpool (460 Beds). The Hospital accommodates patients exhibiting conduct disorders with mental deficiency and provides excellent opportunities for the study, treatment, and training of behaviour disorders of all kinds and degrees. Applicants must be registered medical practitioners. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), dated 7th June, 1949, as amended, and will be subject to the National Health Service (Superannuation) Regulations, 1950. Furnished quarters and attendance (but not food) are provided at a cost of £70 p.a.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service (if any), and present and previous appointments, with names and addresses of 3 referees, should reach the Medical Superintendent, Moss Side Hospital, Maghull, near Liverpool, not later than 2nd February, 1951. Envelopes enclosing applications should be clearly marked A/S.H.O./J.H.M.O. Canvassing in any form will lead to disqualification, but candidates may visit the hospital by direct appointment with the Medical Superintendent.

BOARD OF CONTROL. Applications are invited for the posts of :—

(*a*) SENIOR HOUSE OFFICER,

(*b*) JUNIOR HOSPITAL MEDICAL OFFICER,

at Rampton Hospital, near Retford, Nottinghamshire (1143 Beds). The Hospital accommodates patients exhibiting conduct disorders with mental deficiency and provides excellent opportunities for the study, treatment, and training of behaviour disorders of all kinds and degrees. Applicants must be registered medical practitioners. The appointments will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), dated 7th June, 1949, as amended, and will be subject to the National Health Service (Superannuation) Regulations, 1950. Either furnished quarters and attendance or a house on the Hospital estate will be provided at appropriate charges.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service (if any), and present and previous appointments, with names and addresses of 3 referees, should reach the Medical Superintendent, Rampton Hospital, Retford, Nottinghamshire, not later than 2nd February, 1951. Envelopes enclosing applications should be clearly marked A/S.H.O./J.H.M.O. Canvassing in any form will lead to disqualification, but candidates may visit the Hospital by direct appointment with the Medical Superintendent.

AMENDED ADVERTISEMENT

CIVIL SERVICE COMMISSIONERS invite applications from registered dentists (Men or Women) for permanent appointments as DENTAL OFFICER. There are 11 vacancies on the staff of the Ministry of Health and 2 with the Welsh Board of Health. Inclusive salary scale in London £1100–£35–£1275–£50–£1500 p.a., rather less in Wales and the provinces. The minimum of the scale will be linked to the age of 35 years with deductions of £35 for each year below that age and additions of 1 increment for each year above that age up to the age of 37 years. Most of the vacancies will be outside London, including the 2 in Wales. Candidates must have had not less than 10 years' experience in the practice of dentistry, either in private practice or in some branch of Public Dental Service. For the posts in Wales a knowledge of the Welsh language is very desirable.

Further particulars and forms of application may be obtained from the Secretary, Civil Service Commission, Burlington-gardens, London, W.1, quoting no. 3397. Completed application forms must reach him by 25th January, 1951.

COLONIAL MEDICAL SERVICE. In the larger Colonies MEDICAL OFFICERS are required for general duties, including hospital and district work. These appointments offer great scope for the practice of many branches of medicine and surgery with a considerable measure of independence and personal responsibility. Appointments can be made on a permanent basis with pension (non-contributory) at age of 50 or 55, or on a temporary basis with gratuity. Secondment from the National Health Service can usually be arranged for periods up to 6 years with continuation of superannuation contributions and the payment of a resettlement grant on reversion to the National Health Service. Salaries range from £860 to £1630 a year, the starting salary depending upon age and experience. In most territories in Africa the scale for newly appointed doctors with an approved higher qualification is £1050–£1600 a year, with a higher point of entry according to experience. There are many specialist and administrative posts with salaries above this scale available for officers in the Service on promotion. Free passages are granted in both directions. Income-tax is very low. Tours of service vary from 10 months in Nigeria to 4 years in Kenya. Houses with heavy furniture are provided in most territories at a rent of about 10% of salary. Annual local leave is available and generous home leave is granted after each tour. Study leave on full pay is available for those who wish to acquire higher qualifications. Social and recreational amenities are good. Officers serving in East and Central Africa usually prefer to educate their children within that area, where schooling is available, or in South Africa. The short tours in West Africa enable frequent visits to be made to children being educated at home. Many officers have their children with them in West Africa until they reach school age.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1. (Ref. no. 27215/14.)

DERBYSHIRE COUNTY COUNCIL. Applications are invited from Male registered medical practitioners holding the D.P.H. or an equivalent qualification for the permanent joint appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH for the Derbyshire County Council, and MEDICAL OFFICER OF HEALTH for the Borough of Glossop, and MEDICAL OFFICER OF HEALTH for the Urban District of New Mills. The total inclusive salary will be £1100 p.a., plus travelling expenses in accordance with the County Council's scale. The person appointed will be directly responsible to the Councils of the Borough of Glossop and the Urban District of New Mills for the proper performance of all the duties of a Medical Officer of Health for those areas respectively. As Assistant County Medical Officer he will be concerned, under the direction of the County Medical Officer of Health, with decentralised supervision required under the National Health Service Act, as well as work in connection with school medical inspection, attendance at clinics, and such other duties as may be required. The person appointed must reside in Glossop or New Mills (dwelling-house accommodation would be available at Glossop), must not engage in private practice, and must devote his whole-time to the duties of the before-mentioned posts. The successful candidate will be required to pass a medical examination. The joint appointment, which is superannuable, is terminable by 3 months' written notice on either side.

Application forms may be obtained from the undersigned, to whom they should be returned within 14 days of the appearance of this advertisement. Canvassing, either directly or indirectly, will be a disqualification.

J. B. S. MORGAN, County Medical Officer of Health.
County Offices, St. Mary's Gate, Derby.

FACTORY DOCTORS: Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor under the Factories Acts, 1937 and 1948, is vacant. Applications should be sent to the Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of application*
WEST LINTON ..	PEEBLES ..	27TH JANUARY, 1951

IPSWICH COUNTY BOROUGH. Locum Assistant MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Salary £900 p.a.

Application forms from Medical Officer of Health, Elm-street, Ipswich.

IRELAND. NATIONAL RADIOGRAPHY ASSOCIATION. Appointment of MEDICAL DIRECTOR. Salary £1800 p.a. Essential qualification : Candidates must be registered medical practitioners. Desirable qualifications : Organising ability, possession of D.M.R. or D.M.R.E. (or equivalent qualification), considerable experience of (i) interpretation of chest films and (ii) mass radiography. Duties : To organise and administer a national mass radiography service in Ireland. Appointment will be whole-time and temporary for a period not exceeding 2 years, but may be renewed for such further period as the Association may decide.

Further particulars and application forms obtainable from the Temporary Secretary, National Radiography Association, c/o Department of Health, Custom House, Dublin, to whom completed application forms should be forwarded to reach him not later than 3rd February, 1951.

January, 1951. National Radiography Association.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government officers, teachers, candidates for appointment, &c., who may be referred to them from time to time ; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to the Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form in which application may be made. Applicants should normally be not more than 60 years of age.

The places for which applications are invited are as follows :—

ENGLAND AND WALES

Newport Pagnell (Bletchley).
Colchester and West Bergholt.
Ledbury (Hereford).
London—Blackheath, S.E.3, District.
Milford Haven.

SCOTLAND

Falkirk.
Renfrew (Paisley).
West Linton (Peebles).

OVERSEAS FOOD CORPORATION invites applications for the post of MEDICAL SPECIALIST. Applicants should hold a higher medical qualification and be of the status of Senior Hospital Medical Officer or Senior Registrar. The appointment is in a combined European and African hospital of 150–200 Beds. Commencing salary, according to qualifications and experience, between £1300 and £1600 p.a., rising to £2000. Income-tax at East African rates. Free return passages for employee and for family once in each tour of 3 years. 6 months' home leave on full pay after each tour. 14 days' local leave annually. Pension scheme.

Applications should be made before 3rd February, 1951, to Chief Health Officer, Overseas Food Corporation, 29/33, Hill-street, London, W.1.

LEEDS. CITY OF LEEDS. Applications are invited from registered medical practitioners for appointment of ASSISTANT MEDICAL OFFICER OF HEALTH for Mental Health Services. Consolidated salary £1100, rising, subject to satisfactory service, to £1300 p.a. The post is subject to the Superannuation Act and is terminable by 3 months' notice on either side. The candidate will be required to pass a medical examination. Applicants should have had clinical experience in the field of psychiatry and mental deficiency. D.P.M. of a British university will be an additional qualification. The successful candidate, who will work under the direction of the Medical Officer of Health and School Medical Officer, will be responsible for the clinical work of the Mental Health Services, and may be required to carry out such other duties as may be assigned to him.

Applications on a form to be obtained from the undersigned, together with the names of 3 persons for reference, and endorsed "Assistant Medical Officer of Health," should be sent to the Medical Officer of Health and School Medical Officer, Health Department, 12, Market Buildings, Vicar-lane, Leeds, 1, by 10 A.M. on Wednesday, 31st January, 1951. Canvassing in any form, either directly or indirectly, will be a disqualification.

O. A. RADLEY, Town Clerk.

Civic Hall, Leeds, 1, 22nd December, 1950.

LIVERPOOL. CITY OF LIVERPOOL. Public Health DEPARTMENT. Applications are invited for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH. Salary £1100 p.a., subject to review when the findings of the Industrial Court are adopted by the City Council. The principal duties will be to assume responsibility, under the Medical Officer of Health, for the vaccination and immunisation schemes, but the officer will also be required to assist in the general administration of the Health Department. Candidates should be experienced in the diagnosis of infectious diseases. The appointment is superannuable and subject to the standing orders of the City Council.

Applications, stating age, qualifications, and experience, together with the names and addresses of 3 persons to whom reference may be made, should be sent to the Medical Officer of Health, Gordon House, Belmont-grove, Liverpool, 6, by 17th January, 1951. Canvassing disqualifies.

THOMAS ALKER, Town Clerk.

Municipal Buildings, Liverpool, 2, January, 1951. (2476.)

NATAL PROVINCIAL ADMINISTRATION. Patho-LOGICAL LABORATORY SERVICE. Vacancies: JUNIOR ASSISTANT PATHOLOGISTS AND ASSISTANT CLINICAL PATHOLOGIST. Applications are invited for appointment to the under-mentioned vacant posts in the Administration's Laboratories. Commencing salary in each case will be determined by experience. In addition a cost-of-living allowance at current Public Service rates is payable, i.e., £208 p.a. for a married man, and £50 p.a. for a single man.

(*a*) JUNIOR ASSISTANT PATHOLOGISTS: £400–£100–£800. Successful applicants will be required to work in the hospital clinical laboratories under the direction of the hospital Pathologist. The posts are suitable for persons wishing later to specialise in pathology.

(*b*) ASSISTANT CLINICAL PATHOLOGIST: £1000–£50–£1350. Appointment in the first place will be on contract for 3 years. Applicants should have general experience of clinical pathology. The duties will include visiting the Country Hospital laboratories throughout Natal.

Applications should be addressed to the Senior Pathologist, P.O. Box 49, Jacobs, Natal, South Africa.

NORTHAMPTONSHIRE COUNTY COUNCIL. Appli-cations are invited for the whole-time appointment of ASSISTANT MEDICAL OFFICER for Maternity and Child Welfare and School Medical Inspection (Woman), on the salary scale of £850–£50–£1150 p.a. and on the terms of the recent award of the Industrial Court. Travelling and subsistence allowances will be paid on the scale from time to time approved by the Council. Candidates should possess special knowledge and experience in maternity and child-welfare work and preference will be given to those who hold the D.C.H. and have been approved by the Minister of Education for the examination and ascertainment of handicapped pupils. The Officer appointed will work under the direction of the County Medical Officer of Health. The appointment will be subject to the Local Government Superannuation Acts and will be determinable by 3 months' notice on either side.

Applications, stating age, qualifications, and experience, with the names of 2 referees, should reach the undersigned not later than the 3rd February, 1951.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton, 28th December, 1950.

WORCESTERSHIRE COUNTY COUNCIL. Applications are invited from suitably qualified medical Women for the appointment of SENIOR ADMINISTRATIVE MEDICAL OFFICER for Maternity and Child Welfare. The appointed officer will act under the general direction of the County Medical Officer and will be engaged in the main on the administrative duties of the maternity and child welfare scheme although some clinical or other work may be required to be undertaken. The appointment will be terminable by 3 months' notice by either party. The salary will be at the rate of £1035, rising £50 biennially to £1222 10s. p.a., or in accordance with any other national scale which may become operative. The appointment will be superannuable and will be subject to a satisfactory medical examination. The successful applicant will be required to reside in or near Worcester and should be in possession of and be able to drive a car for which a travelling allowance in accordance with the Council's scale will be paid.

Applications, on forms to be obtained from the County Medical Officer, County Buildings, Worcester, should be submitted to him with not more than 3 recent references not later than 31st January, 1951.

W. R. SCURFIELD, Clerk of the Council.

Shirehall, Worcester, January, 1951. (N67.)

General Practice

For an Executive Council post apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

BANISTER PARK, SOUTHAMPTON. Applications invited for urban VACANCY. Number on list 1st October, 1950, was 1255. Residence and surgery not available. Apply on E.C.16A not later than 23rd January, 1951, to—

C. A. BLUNDY, Southampton Executive Council.

5, Rockstone-place, Southampton.

SHIPLEY, YORKS. Applications are invited for Vacancy (urban). List at present approximately 1350. Surgery accommodation probably available. Apply on E.C.16A to the undersigned not later than the 20th January, 1951.

C. H. STABLER, Clerk of the
West Riding of Yorkshire Executive Council.

5, St. John's North, Wakefield.

ELLAND, YORKS. Applications are invited for Vacancy (urban). List at present approximately 1430. Residential and surgery accommodation available for purchase on negotiation. Apply on E.C.16A to the undersigned not later than the 20th January, 1951.

C. H. STABLER, Clerk of the
West Riding of Yorkshire Executive Council.

5, St. John's North, Wakefield.

WATERLOOVILLE AND PURBROOK, HANTS. Appli-cations invited for VACANCY (chiefly urban). List at present approximately 2750. Residence and surgery not available. Apply on Form E.C.16A before 24th January, 1951, to undersigned, giving details of professional experience, age, other supporting particulars, and any references it is desired to submit.

F. STEED,
Clerk of the Hampshire Executive Council.

37, Southgate-street, Winchester, Hants.

Hospital Services : Non-Medical Appointments

BIRMINGHAM (DUDLEY ROAD) GROUP OF HOS-PITALS. DUDLEY ROAD HOSPITAL, BIRMINGHAM, 18. Applications invited for post of GRADUATE ASSISTANT in the Biochemical Department at the above Hospital. Candidates with experience of hospital biochemistry preferred. Salary will be at rate of £510 p.a., rising by annual increments of £25 to £610 p.a.

Applications to be sent in the first instance to the Secretary Hospital Management Committee, Dudley Road Hospital, Birmingham, 18.

For appointment of Non-medical Chief Biochemist i/c Endocrine Laboratory, Chelsea Hospital for Women, see advertisement in Senior Appointments section.

Miscellaneous

Assistant Editor. Applications are invited from medical Men, preferably 27–30 years of age, for appointment as a Junior Assistant Editor in our office.—Please address: The Editor, THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. (Mark envelope "Personal.")

Qualified Shorthand-Typist, with nursing experience, requires post as Secretary/Receptionist in Southampton/Portsmouth area.—Address, No. 500, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Lady, experienced car driver, well educated, highest references, requires position as Receptionist to London Ophthalmic Surgeon.—Address, No. 501, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Bournemouth. Executor's Auction Sale. Loreto Conva-lescent Nursing Home, Cavendish-road, 25th January, 1951, as going concern. Well appointed and furnished detached property. 14 patients' and 2 staff bedrooms (all h. and c. basins), 2 bathrooms, lounge, sun lounge, modern domestic quarters. Central heating. Well maintained ornamental and productive garden. 2 garages. Popular and profitable concern.—Illustrated particulars of the Auctioneers, FOX & SONS, 44–52, Old Christchurch-road, Bournemouth.

4, Upper Wimpole-street, W.1. Attractive self-contained Maisonette on ground and first floors, comprising 5 rooms, kitchen and bathroom, suitable for medical man for residential and professional purposes. £675 p.a. inclusive of present rates.—Apply: ELLIOTT SON AND BOYTON, 86/7, Wimpole-street, W.1. (WELbeck 8367.)

Accommodation in Ealing available at the beginning of March which would be suitable for a Clinic (Orthopædic, Dental, Eye, &c.) or offices for Professional men.—Apply, Address, No. 499, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

At Portland-place, W.1 (off). Attractive period style property, 12 rooms, 2 bathrooms, &c., suitable residential or professional purposes. Virtual freehold. Price £13,000.—H. COLLINS & Co., 26, Sackville-street, W.1 (Regent 5577).

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to: M.O. LABORATORIES LTD., 24, Welbeck-way, London, W.1.

Microscopes. Second-hand Bargains, guaranteed sound order. Write for List. Deferred terms if required.—WALLACE HEATON LTD., 127, New Bond-street, W.1 (MAYfair 6511).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141) who are specialists in this kind of work.

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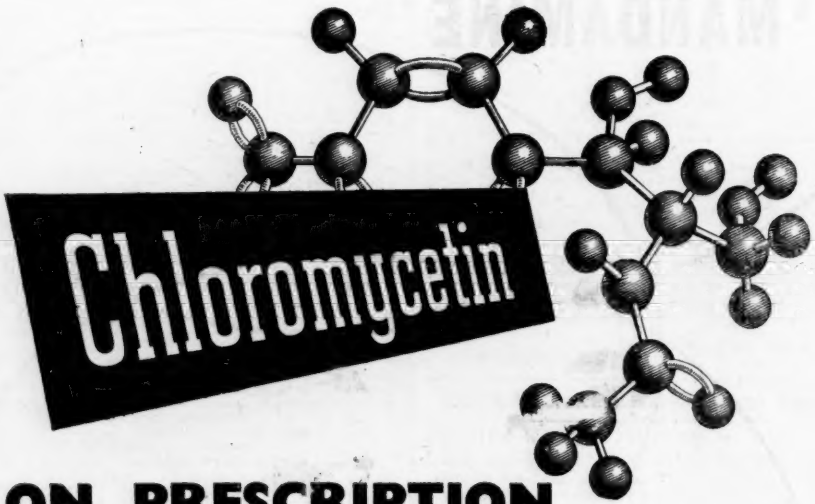

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